ENGINEERING NEWS-RECORD

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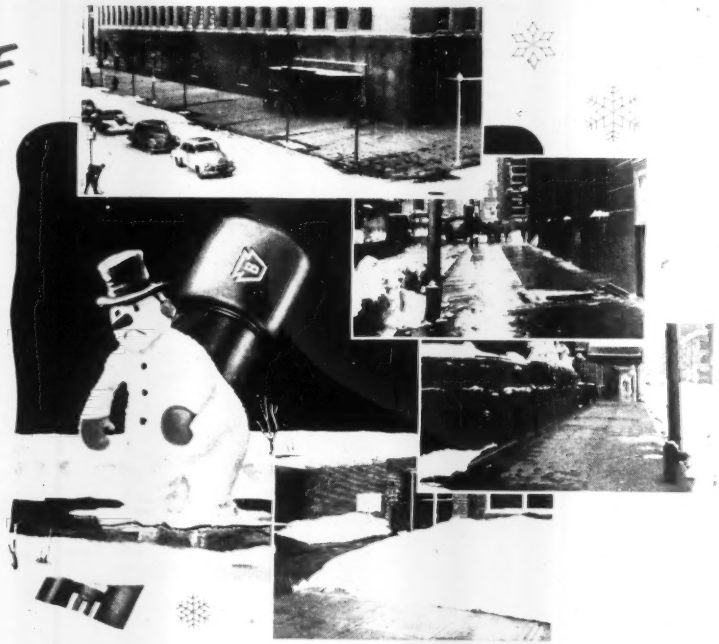

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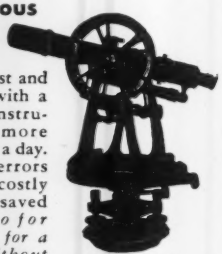

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ENGINEERING NEWS-RECORD

ABP Member ABC

Volume 149 July 3, 1952 No. 1

WALDO G. BOWMAN
Editor

FEATURES IN THIS ISSUE

Test tracks promise burst of new know-how 34
A fresh look at three lighting problems ..... H. L. Logan 40
Army Engineers rebuild ancient dam 42
Activated sludge process gets new twist 45
Flatbed trucks haul girder sections to new use 46

DEPARTMENTS

Reader Comment	10	Men and Jobs	75
Construction Trends	17	Research	81
Construction Week	19	Obituaries	85
News of the Week	21	Business and Finance	101
Meetings	29	Unit Prices	106
Labor	49	Construction Reports	107
Municipal	56	New Products	123
International	66	Editorials	128

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ROBERT F. BOGUE
Publisher

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IT'S THE ROCK JOBS

that prove a Shovel!

Any shovel can dig dirt! But, put it in rock! Get up on a Northwest if you know "operation". Get the feel of the controls. Feel that crowd take a-hold. The dipper goes right on through as the hoist takes it up — no "re-starts" are required here. It's a full load in one cut. Remember the Northwest Dual Independent Crowd utilizes force most other independent crowd shovels waste — force that puts greater effectiveness at the dipper lip for handling tougher digging and producing more output.

To Northwest digging power add the "Feather-Touch" Clutch Control which brings ease of operation without the complications of pumps, piping and compressors; the Cushion Clutch that eliminates shock overloads before the damage is done; Uniform Pressure Swing Clutches that cut spotting time by eliminating the jerks and grabs in swinging; Northwest simplicity of design that makes upkeep easy and reduces "down time"; and all the other Northwest advantages that make Northwest a *real* Rock Shovel.

You can plan to have a Northwest. Now is the time to find out about Northwest design and operation. Why not talk it over with a Northwest man?

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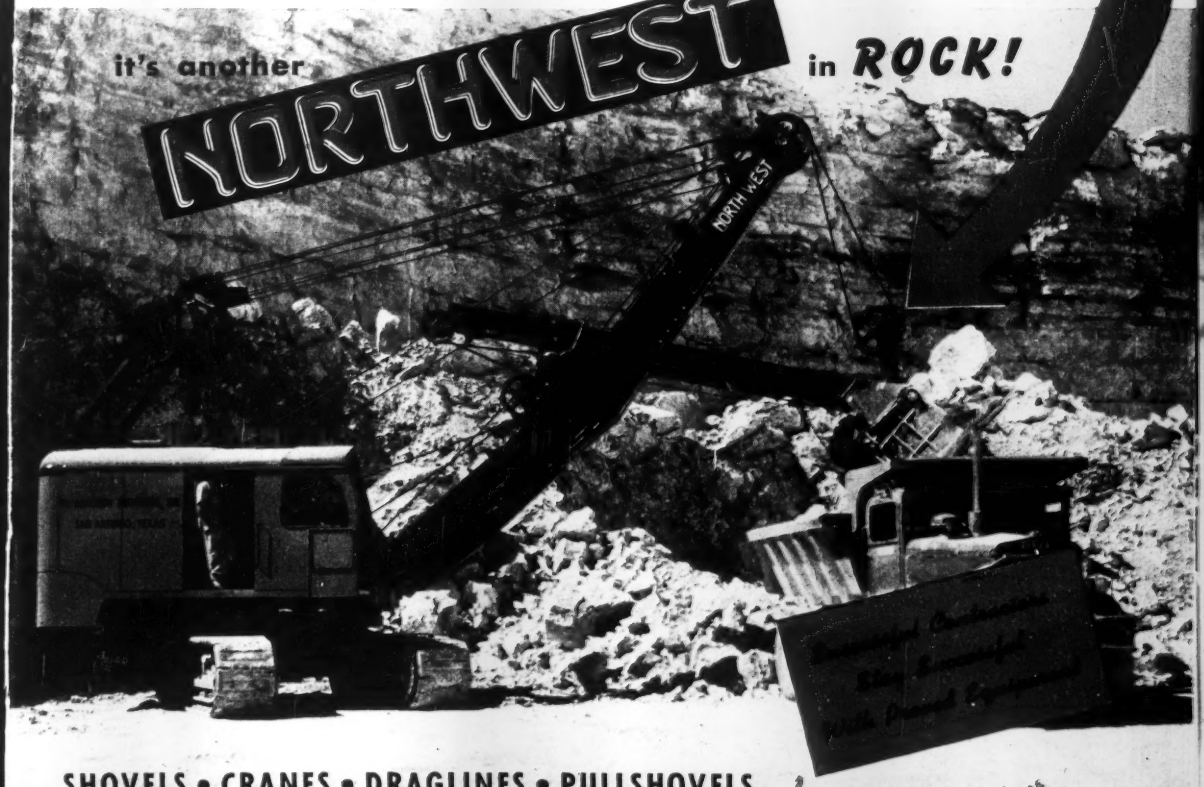
it's another NORTHWEST in ROCK!



SHOVELS • CRANES • DRAGLINES • PULLSHOVELS

Monsanto Penta protects against tropical termites

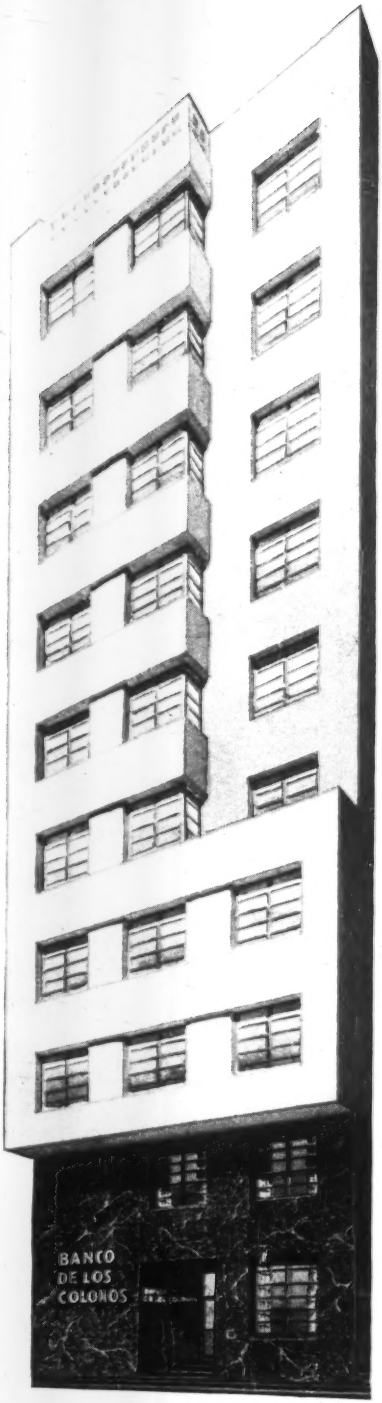
Plywood and wormy chestnut used in the interior of the beautiful, new home of Banco De Los Colonos, Havana, Cuba, get double protection from a pressure-applied formulation of Monsanto Penta.

In this area of tropical humidity, there were two exacting jobs to be done. One, for the owners, who insisted that the wood be protected against drywood and subterranean termites. The second, for the designers, who wanted to insure dimensional stability of the paneling, to prevent cracking and distortion of finishes. A water-repellent solution of Monsanto Penta fulfilled both requirements.

Monsanto Penta (pentachlorophenol) is a stable chemical developed specifically for wood preservation. It does not leach . . . does not wash away in rain or ground water. It protects against termites and other wood-boring insects. It prevents decay.

Whether your designs call for wood in bank interiors or bridge timbers, it will be worth your while to investigate Monsanto Penta. Complete information may be obtained from any Monsanto Sales Office or from MONSANTO CHEMICAL COMPANY, Organic Chemicals Division, 1700 South Second St., St. Louis 4, Mo.

DISTRICT SALES OFFICES: Birmingham, Boston, Charlotte, Chicago, Cincinnati, Cleveland, Detroit, Houston, Los Angeles, New York, Philadelphia, Portland, Ore., San Francisco, Seattle, Twin Cities. In Canada, Monsanto Canada Limited, Montreal.

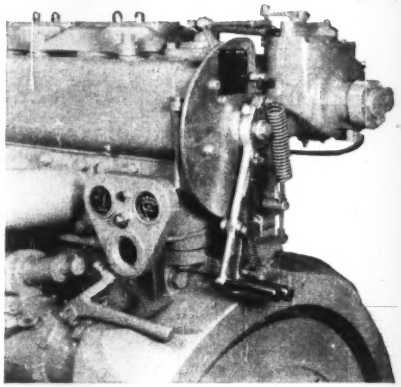


Design and Construction	Bank Building & Equipment Corporation of America, St. Louis, Mo.
Wood Treating Preservative	Monsanto Chemical Company, St. Louis, Mo.
Wood Treating Application	Associated Wood Preservers, St. Louis, Mo.
Wood Finishes	Grand Rapids Varnish Company, Grand Rapids, Michigan

MONSANTO
CHEMICALS — PLASTICS

SERVING INDUSTRY...WHICH SERVES MANKIND

Here's why MURPHY DIESELS... have instant power response



the hydraulic servo-type governor

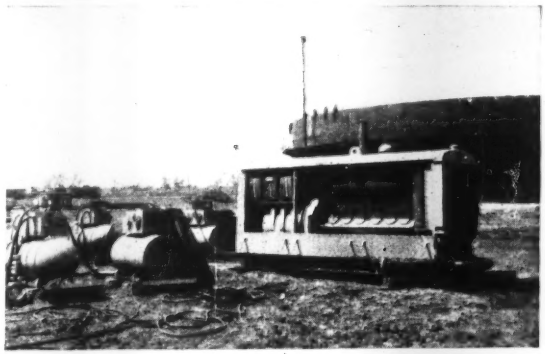
Only MURPHY gives you this important feature...

ONE vital characteristic of a diesel engine used in tough construction service is its ability to handle all types of loads—steady loads that require accurate speed control or varying loads where instant response is essential. The Murphy Diesel—because it has a hydraulic servo-type governor—controls speed precisely, responds instantaneously. It responds so quickly and positively that many operators have said, "It seems to know in advance what the load is going to be."

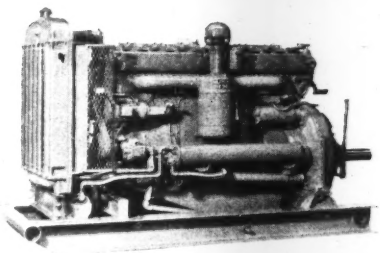
This instant response is made possible by the Murphy's basic design—a "true" diesel with unit fuel injection—plus the hydraulic servo-type governor. This governor harnesses lube oil pressure to assist the flyweights in controlling the proper amount of fuel to the injectors, and providing positive, accurate control at all times.

An important safety feature is the ability of the governor to automatically shut-off the engine if lube oil pressure falls below a safe level. There is no danger of running the engine with lube oil dangerously low.

The hydraulic servo-type governor is just one of Murphy's exclusive combination of design features. Others are described in the booklet *"10 Questions to Ask a Diesel Engine Salesman"*. Ask your Murphy Diesel Dealer for a copy or write direct.



Murphy Diesel 100 K.W. generator set powering a battery of welders used in tank erection.



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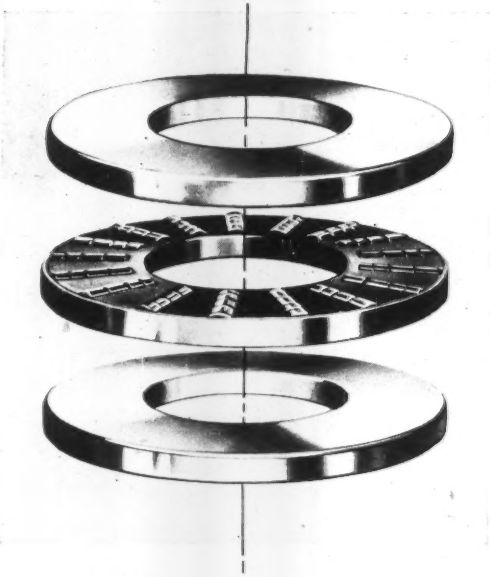
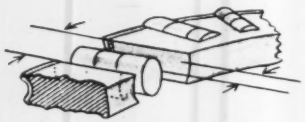
True *Line* Contact

reduces unit pressures; increases maximum capacity

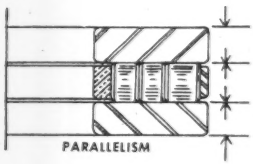


Heat-treated to insure uniform hardness and surface structure, both the solid-cylindrical rollers and the thrust plates of Rollway Thrust Bearings are held to extremely close limits of parallelism. The result is a true line contact that reduces unit pressures, increases maximum capacity and affords a wide margin of safety for overloading shock or vibration.



PARALLELISM

Accurate parallelism between the rollers and the matched thrust plates is repeated in the parallelism between the separator slots and the rollers themselves—all adding up to quietness, equalized wear and longer life.



PARALLELISM

Rollway Thrust Bearings offer the widest selection in types and sizes, available for quick replacement through AUTHORIZED DISTRIBUTORS. See your classified 'phone directory for name.

Our engineers are available without cost or obligation to assist you in selecting the correct Rollway Bearing for your needs. 'Phone your nearest Rollway sales office.

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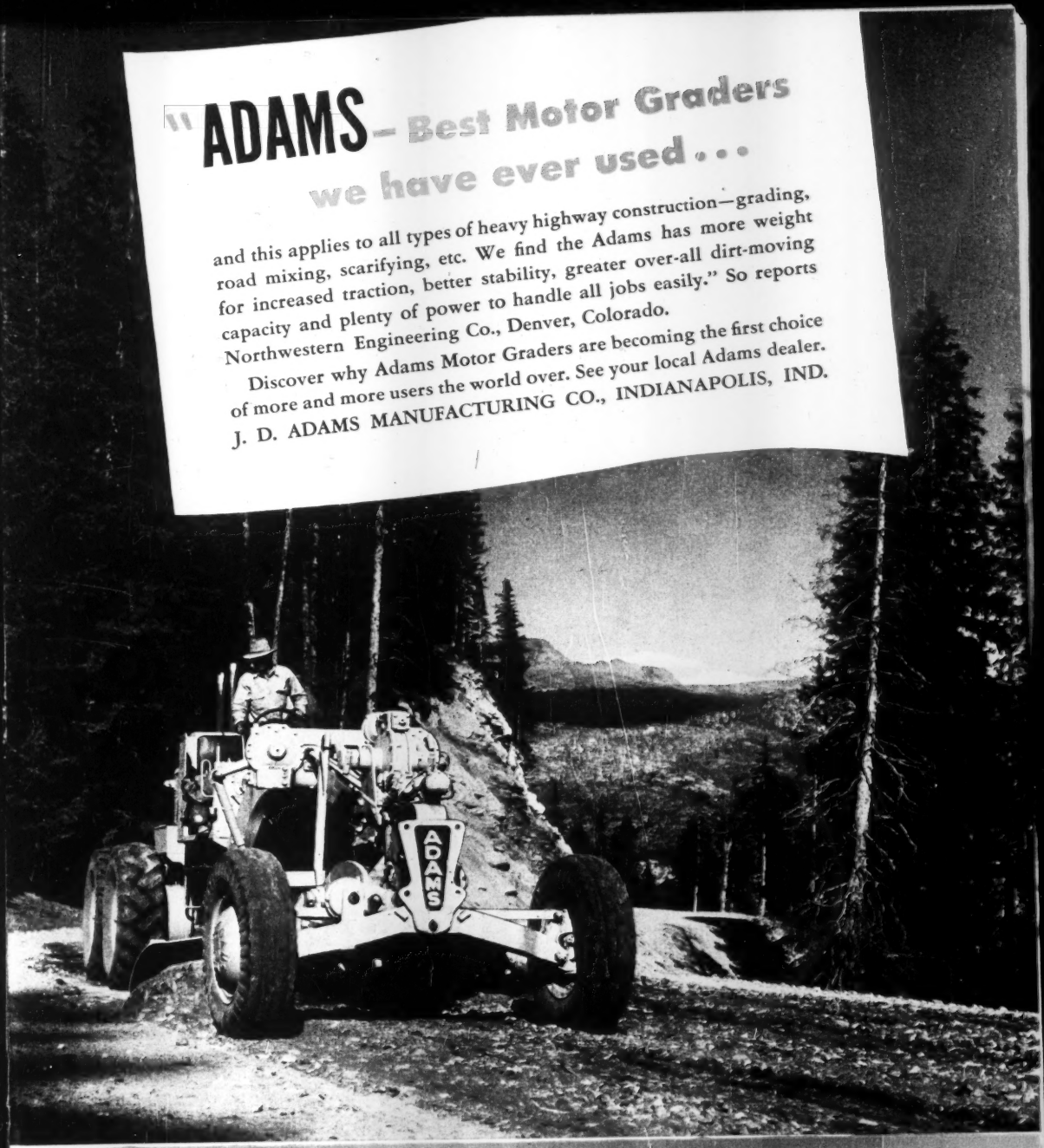
and this applies to all types of heavy highway construction—grading, road mixing, scarifying, etc. We find the Adams has more weight for increased traction, better stability, greater over-all dirt-moving capacity and plenty of power to handle all jobs easily." So reports Northwestern Engineering Co., Denver, Colorado.

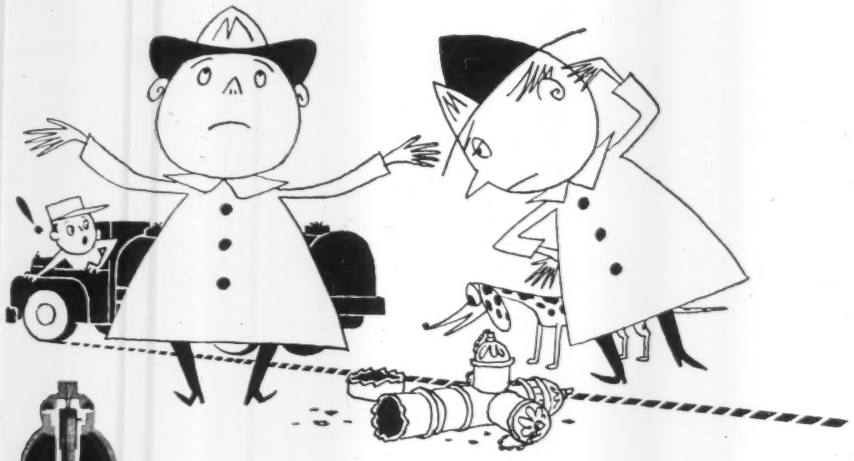
Discover why Adams Motor Graders are becoming the first choice of more and more users the world over. See your local Adams dealer.

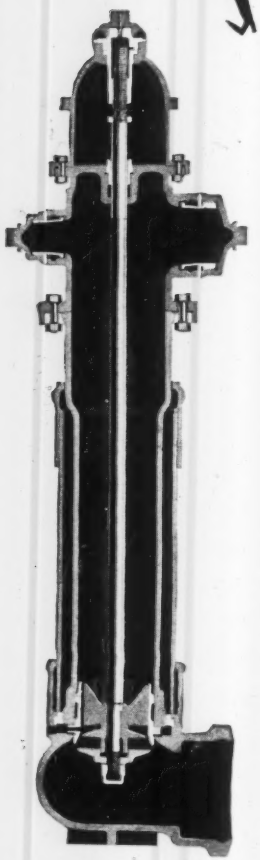
J. D. ADAMS MANUFACTURING CO., INDIANAPOLIS, IND.



Make your next motor grader an ADAMS

Broken hydrant cannot leak!





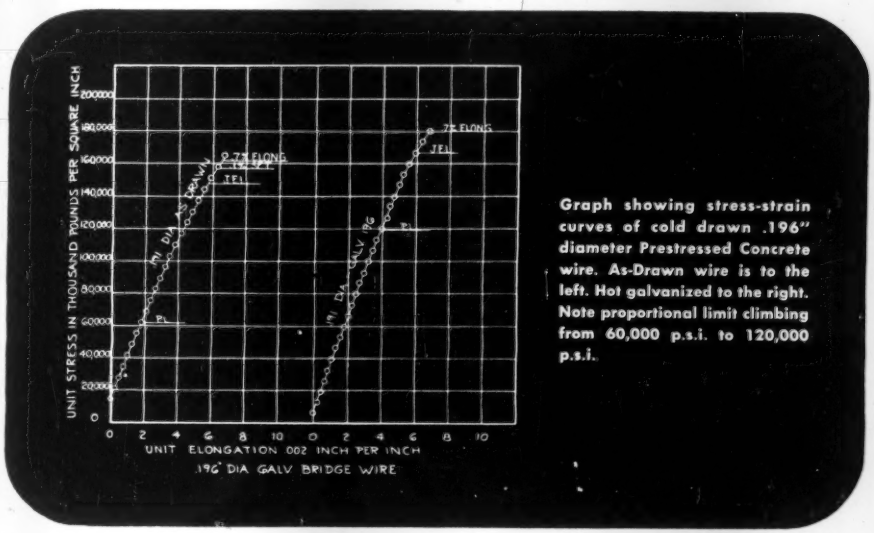
The main valve opens against water pressure and closes with it. This is foolproof protection against flooding when hydrants are broken in traffic accidents.

MATHEWS
HYDRANTS

Made by R. D. Wood Company, Public Ledger Building, Independence Square, Philadelphia 5, Pa. Manufacturers of "Sand-Spun" Pipe (centrifugally cast in sand molds) and R. D. Wood Gate Valves

Mathews Modernized Hydrants . . . Tops in Convenience and Dependability Compression-type valve prevents flooding • Head turns 360° • Replaceable head • Nozzle sections easily changed • Nozzle sections raised or lowered without excavating • Protection case of "Sand-Spun" cast iron for strength, toughness, elasticity • Operating thread only part to be lubricated • All working parts contained in barrel • A modern barrel makes an old Mathews good as new • Available with mechanical joint pipe connections

PRESTRESSED CONCRETE



Graph showing stress-strain curves of cold drawn .196" diameter Prestressed Concrete wire. As-Drawn wire is to the left. Hot galvanized to the right. Note proportional limit climbing from 60,000 p.s.i. to 120,000 p.s.i.

Why you should use hot-dipped galvanizing

SURFACE PROTECTION is *not* the chief reason to specify hot-dipped galvanizing on your post-tensioned Prestressed Concrete projects. It's true that this method gives the best protective coating against corrosion. More important, however, hot-dip galvanizing of the acid steel relieves the wires and raises their elastic properties considerably above those of cold drawn wire.

This wire permits the use of design-tension stress of 120,000 p.s.i. Used at this value, you are always working in the elastic range of the wire itself. And we can guarantee absolute stability with no relaxation of the steel . . . your assurance of safety for the life of the structure.

Each length of Roebling Prestressed Concrete Strand is made into an assembly at the factory with the use of specially designed fittings. Each fitting develops the full breaking strength of the strand without exceeding the yield point of the material in any part of the fitting. Each assembly is then proofloaded in excess of the recommended design-tension stress.

At the construction site the use of an inexpensive hydraulic ram brings the strand assemblies to stress in minutes, cutting the on-the-job labor costs to a minimum. And you never need worry about costly take-ups either.

Strand for post-tensioning is just one of a full line of Roebling Prestressed Concrete products. Wire and strand for *pre-tensioning* are made of high tensile acid steel that results in exceptionally high elastic characteristics. They are specially treated to greatly increase their bonding quality, too.

We manufacture our own prestressing materials. We know they will deliver all we promise and more. Get the facts and figures on Roebling Prestressing materials. Write Prestressed Concrete Department, John A. Roebling's Sons Company, Trenton 2, New Jersey.

Roebling Prestressed Concrete Strand and its specially developed fitting which are available in a complete range of sizes from ⅜" to 1-9/16". With an inexpensive hydraulic ram, assemblies such as these can be brought to stress in a matter of minutes.

ROEBLING

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READER COMMENT

Diagonal tension blamed

Sir: In regard to the failure of the waffle roof, from the description in the article, and the photograph in your May 22nd issue, the collapse was apparently due to a failure in diagonal tension.

This is indicated by the section at which the slab sheared off. Also by the fact that the engineers on the job were warned by the sound of the concrete cracking, indicating the rupture of a brittle material, which would be the case of unreinforced diagonal-tension failure.

The photographs seem to show that there was little, if any steel near the point of inflection where this shear failure occurred.

This type of shear failure in experiments has been characteristic of under-reinforced beams, especially those where bond was poor.

DAVID B. CHESKIN
Consulting Engineer
Chicago, Ill.

Shear broke waffle slab?

Sir: In the May 22 issue of the ENR you published a picture and description of the failure under overload test of the waffle roof in Florida. You suggested that positive tension cracks at the bottom of the center portion of the slab caused the collapse. These cracks, you submitted, induced excessive negative moments around the columns to the extent that the center portion dropped out, and the columns buckled outward symmetrically.

I have only the data published in ENR's original article in the Feb. 21 issue, but I would like to suggest another cause of the failure.

I think it was caused by shearing of the slab around the head of the column in the front left of the picture in your May 22 issue. When the slab thus lost one of its supports, total collapse naturally followed. Evidence in support of this theory is as follows:

1) There were no warning deflections, which usually precede moment failures.

2) Your photograph shows three columns bent outward still carrying considerable portions of the slab. The fourth column acted differently. The upper portion remained intact, while the lower part buckled near its base. And the slab was entirely broken off around the head of this column.

3) The photograph does not reveal, nor does the text describe, any design provisions for transferring the slab load to the columns. Therefore it must travel into the column head through four ribs, each composed of very thin poured concrete joists and the block walls on either side. It is highly improbable that the smooth surfaces of the block walls, without indentation or keys, would facilitate the transferring of shear stresses into the walls of the blocks. Rather, I believe that bond between the block walls and poured joist broke under the additional shear stresses induced by the overload test, leaving just the thin joists to take all the shear. They couldn't, and failure followed.

GEORGE S. PINTER
Partner, Starr and Pinter, Inc.
New York, N. Y.

Industrial waste charges

Sir: This letter is prompted by your article in ENR May 29, p. 58 entitled "What charges will industry accept for industrial waste disposal?" The Sanitary District of Decatur, Ill., has for over a year had a working rate structure for industrial wastes based on volume, suspended solids and organic matter as well as on property tax. It might be worth comparing with the rate structure figured for the Raritan trunk sewer project described in the above mentioned article.

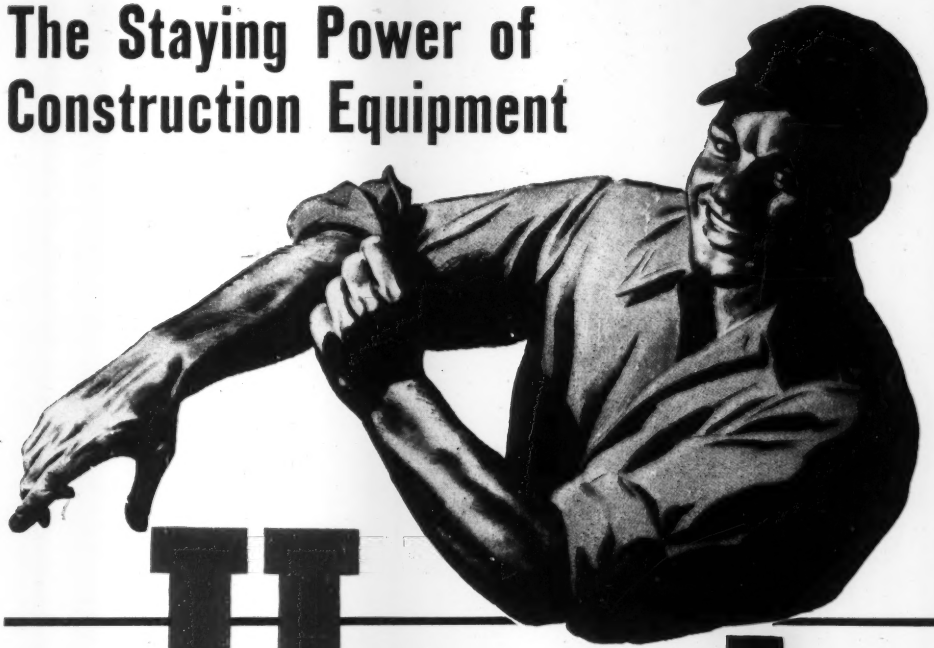
Since its inception in 1917 our sanitary district has built and operated sewage works with revenues from its established tax rate. And today's plant is double the size our population requires, enlarged to accommodate large industries.

But now, inflation and expanding industry have caught up with tax revenues and an amendment in our act has had to be brought to bear permitting us to charge industry "fair additional construction, maintenance and operating costs over and above those covered by normal taxes." After all, this is only fair because for the past 25 years, the general public has carried much more than its share of the waste treatment costs and some industries have paid much less than their share.

To arrive at a method of making a charge for industrial wastes, which would be fair to the general public (as represented by the Sanitary District) and to the industries involved, the board of trustees of the district in 1949 engaged our consultants, Greeley & Hansen, Chicago, to study

(*Continued on page 15*)

The Staying Power of Construction Equipment



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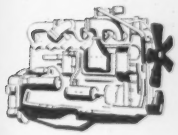
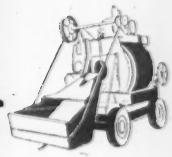




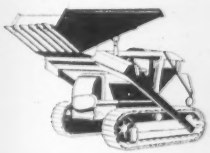
BY THESE 4 STEPS

1st step: Examine Cities Service lubricants for out-and-out quality through your purchasing experts or test facilities...or from service records established by critical users.

2nd step: Look into the completeness of the Cities Service line as an aid to simplified ordering and prompt, steady supply . . . backed by the extensive facilities and intensive cooperation to keep you out of any lubrication "jam."

3rd step: Review the construction field's most effective lubrication practices by consulting that fully informed specialist, the Cities Service Lubrication Engineer.

4th step: Ask for facts about the high character of the Cities Service line and the practical technical assistance now upping the staying power of construction equipment for many of industry's "hardest drivers." Write CITIES SERVICE OIL COMPANY, Dept. G14, Sixty Wall Tower, New York City 5. Or call the Cities Service office nearest you.



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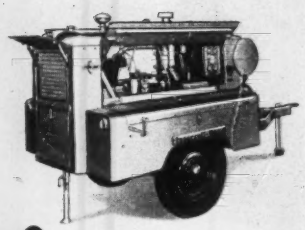
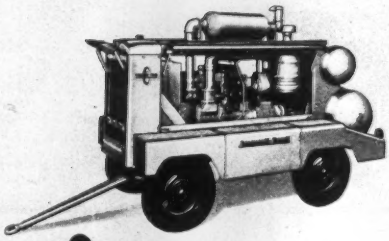
NOW . . . GYRO-FLO

Ingersoll-Rand *Rotary* Mobil-Air



GYRO-FLO 105 cfm

Weighs only 2630 lbs., ready to run. Available matched to GM 2-51 diesel or Continental F-162 gasoline engine.



GYRO-FLO 210 cfm

Weighs only 4360 lbs., ready to run. Available matched to GM 4-51 diesel or Continental M-330 gasoline engine.

No other Portable Compressor offers you all these advantages!

- **As much as 40% Lighter In Weight.** And as much as 20% smaller in overall size.
- **No Valves, Pistons, Rods Or Clutch.** No valves to leak, no reciprocating parts to wear out. Smooth, vibration-free operation.
- **Oil Injection Cooling.** Seals against air slippage and keeps discharge temperature below 200°F. Compressor cooling system independent of engine cooling.
- **Low Oil Consumption** throughout life of compressor. Oil injected into the air for cooling is removed by a separator and recirculated.
- **"Air-Glide" Capacity Control.** Provides smooth, stepless regulation of compressor capacity all the way from 0 to 100% output. Holds pressure within 10 psi range at all loads. Keeps engine at minimum speed.
- **Takes Full Advantage Of Modern Engine Speeds.** Compressor matched to nationally-known diesel or gasoline engines.

GYRO-FLO *is an addition to the* **IR CONTRACTORS' COMBINATION**

COMPRESSORS • AIR TOOLS
ROCK DRILLS • TURBO BLOWERS
CONDENSERS • CENTRIFUGAL PUMPS
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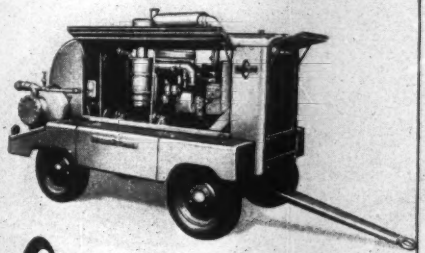
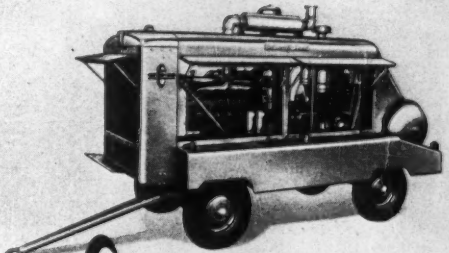
PORTABLE COMPRESSORS IN 4 SIZES



GYRO-FLO
315 cfm

Weighs only 5200 lbs., ready to run. Available matched to GM 3-71 diesel or Continental B-427 gasoline engine.



GYRO-FLO
600 cfm

Weighs only 9500 lbs., ready to run. GYRO-FLO rotary compressor matched to powerful GM 6-71 diesel engine.

Important savings in operation and maintenance with this complete line of rotary compressors

"Better any way you look at it." That was the verdict of contractors everywhere when the 600 cfm GYRO-FLO compressor was introduced last year. And now—the same cost-saving advantages of the *rotary compressor* have been extended to three smaller sizes.

The GYRO-FLO is the most revolutionary design change during Ingersoll-Rand's 50 years of portable compressor history. The GYRO-FLO is far smaller—simpler—lighter in weight—and easier to maintain—than any other portable compressor heretofore available.

The features described on opposite page speak for themselves. And in actual on-the-job performance, GYRO-FLO compressors have repeatedly proved their dependability under the most rigorous operating conditions.

If you need more or cheaper air—go GYRO-FLO. Your nearest I-R representative will be glad to give you the whole story.

Ingersoll-Rand

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AERO mapping put this AEC construction schedule ahead by months!

First step in this $1,200,000,000 construction job was photo-mapping the 210,000 acre area. Skilled AERO *crews flew it in less than two weeks for the AEC.*

This is the pay-off on one of the biggest, fastest mapping jobs ever done. Those Caterpillar tractors and clamshells are at work on the AEC Savannah River facility weeks and months ahead of schedule! Construction is rolling fast, and it started rolling when Aero Service mappers went to work last year.

AERO was a natural for the job. We like the tough ones, and the AEC needed these maps "yesterday." Here's the performance record:

Total area: 210,000 acres
Map scale: 1″ = 100′—2′ or 5′ contours
First delivery: 1,000 acres in 15 days
Weekly deliveries: 6,000 acres average
Final delivery: 5 months

That sort of record takes planes and personnel. But most of all it takes teamwork and *drive*. AERO mappers are proud of their reputation for getting the job done fast . . . accurately . . . within the budget.

Our record includes the Oak Ridge atom bomb plants, the Pennsylvania Turnpike extensions, the Missouri River Valley mapping, as well as recent railroad location studies in rugged areas of Alaska and Venezuela.

AERO speeds mapping at low cost and high accuracy for industrial plant development, city planning, pipe lines or power lines, oil or mining exploration, or any large project. Our experience—33 years of it—is worldwide. Let our engineers work with you.

AERO *field surveymen established a network of ground control for the air photos with precision theodolites, using radio transceivers for communication between crews.*

AERO
SERVICE CORPORATION
PHILADELPHIA 20, PENNSYLVANIA
Oldest Flying Corporation in the World

AIRBORNE MAGNETOMETER SURVEYS • PLANIMETRIC MAPS
PRECISE AERIAL MOSAICS • TOPOGRAPHIC MAPS
COLOR PHOTOGRAPHY • RELIEF MODELS

(*Continued from p 10*)

our construction and operating costs and recommend fair charges. Samuel

A method of computing charges was worked out. It consists of allocating a fair share of the total annual cost of each part of the sewage works to (1) the public interest, (2) use-charge and (3) property charge. The use-charge is further allocated among quantities, organic matter and suspended solids.

Based on our audited expenditures for the fiscal year ending April 30, 1951 and the necessary engineering quantities, the rates for 1951-2 are as follows:

Public & property charge	$ .395 per $1,000 assessed valuation
(Q) Volume	$4.30 mg
(SS) Sus. Solids	1.39 1,000 lb
(BOD) Org. matter	2.91 1,000 lb

From the total of the public, property and use-charge are deducted the taxes paid to the sanitary district by the industry, thus giving the industry full credit for Sanitary District taxes paid.

Our fiscal year begins May 1, so that the rates for each year are available soon after that date. These rates would be applicable for that year's use-charges, which would be payable the following January unless quarterly bills are preferred.

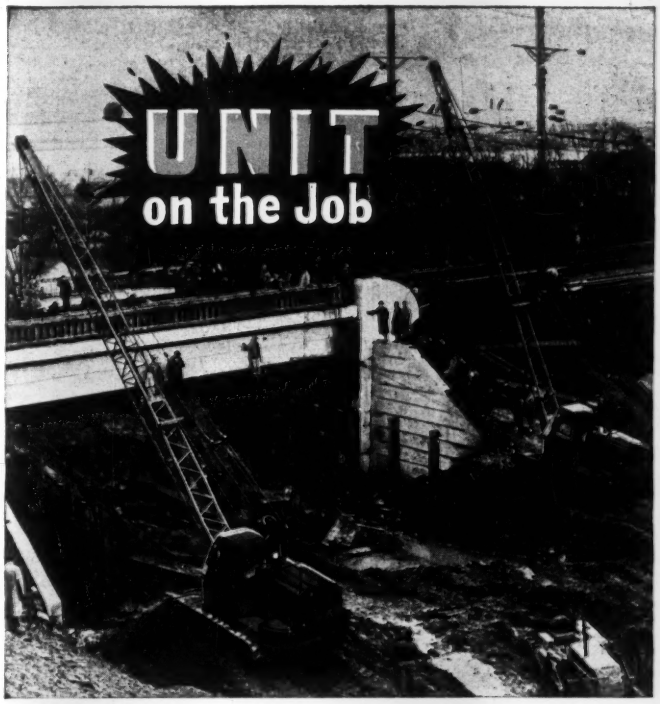
Our problem differs from that of the Middlesex County Sewerage Authority in the following important respects:

Our bonds and interest were completely paid off in 1943, so our charges are only to cover administration, maintenances and operation—no capital costs. Our much lower rates reflect this lack of capital charge. We have complete treatment (activated sludge and trickling filters), but we do not chlorinate and thus have no chlorination charge.

As an example for comparison with the Raritan trunk sewer rates, our largest industry, the Staley Mfg. Company, paid $45,504 for the year ended April 30—including a Sanitary District tax of about $8,000. Applying the Raritan rates to their wastes, they would have paid $78,160 (chlorine charge excluded). This difference is not out of line since the latter includes capital charge for bonds and interest, as it should.

So far, we have approached only larger industries. But we expect soon to include every industry (laundry, dairy and small packing house) discharging wastes such that the annual charge figured by our rate structure will net greater than $500.

W. D. Hatfield
Superintendent
Sanitary District of Decatur, Ill.



TEAMWORK and Accurate Control

Working as a team, these two UNIT 1020 Cranes moved a 500 TON railroad bridge from its temporary mounting to the new structure in a period of thirteen (13) minutes. This type of job calls for smooth and accurate control of boom and hoist line operation. UNIT'S extra long crawlers, multiple-hinged shoes, wide axles, and hook rollers provide perfect balance and stability. This, together with the FULL VISION CAB for complete visibility, makes UNIT the machine that is dependable and safe to handle efficiently any type of heavy-duty work.

SEE FOR YOURSELF: *Let us send you our novel TV Brochure. It illustrates the complete UNIT line.*

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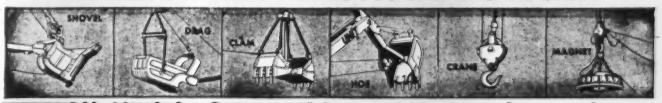
6315 WEST BURNHAM STREET • MILWAUKEE 14, WISCONSIN, U. S. A.

½ or ¾ YARD EXCAVATORS...CRANES UP TO 20 TONS CAPACITY
CRAWLER OR MOBILE MODELS . . . GASOLINE OR DIESEL



All Models Convertible to ALL Attachments!

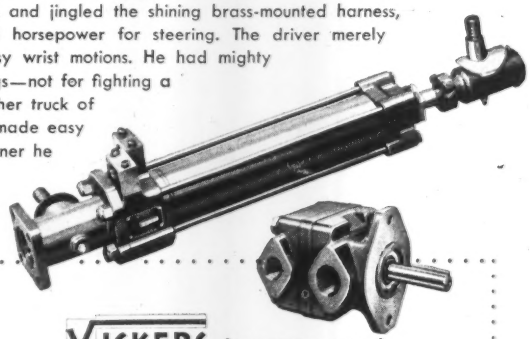
A 7186-2/3-C

Mighty muscles to wrestle kegs

but not for steering

Horse Power Did The Steering Then... *Why not now!*

Majestic brewery horses, as they nodded their gay plumes and jingled the shining brass-mounted harness, supplied horsepower for steering. The driver merely guided them with easy wrist motions. He had mighty muscles—for wrestling kegs—not for fighting a steering wheel. • The ordinary brewery truck or other truck of today has lost its horsepower for steering. Everything is made easy for the driver except the job he has to do at every corner he turns . . . when dodging traffic . . . in parking. He herds the hack by main strength, often parks with wrenching heaves. If the vehicle is very big he has to have mighty muscles, no matter what he's carrying. • And he tires on the job . . . he slows down, becomes less efficient and gets less done. • Why not have Vickers Hydraulic Power Steering on your trucks? It provides the horsepower for steering so the driver can handle any vehicle with an easy twist of the wrist. He retains his efficiency and gets more done . . . with greater safety. Get the details on Vickers Hydraulic Power Steering; write for Bulletin M-5100.



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VICKERS hydraulic POWER STEERING

is Effortless, Positive and Shockless

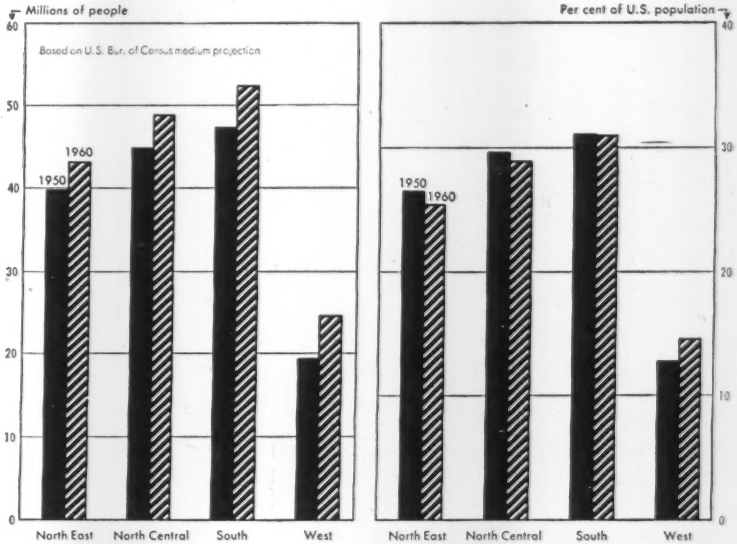
Population trends favor West

The U.S. population is still growing fast it increased about 5.3 million—or 3.5%—to 156.4 million in the two years since the 1950 Census. And it will grow a lot more between now and 1960; government estimates for 1960 put the population at anywhere from 165 million to 180 million.

Practically all parts of the country are getting more people. But the regions are not sharing equally in the gain. Judging by recent trends, growth is likely to be fastest in the West, where extra gains come from migration from other sections of the country.

Rocky Mountain and Pacific Coast states have been growing faster than the rest of the U.S. for decades; their share of the U.S. population jumped from 8.4% in 1920 to 12.9% by 1950. It's likely to be somewhere around 14.6% by 1960, if this trend keeps up. Somewhere between 22.5 million and 26 million people may be making their homes out West by 1960, compared to 19.5 million.

Aside from the West, only the South Atlantic region has been increasing its share of the population significantly. Except for a few scattered states, the rest of the U.S. has been growing at a slower rate.



All regions will grow... but only West's share increases

• **The outlook**—All this does not mean the western states will necessarily get bigger shares of new construction in the immediate future. Population growth is only one of the forces that make for more building. But this growth, if it continues, will be a major force favoring the West.

One highly important change does not show up in these figures. That's migration within a region—which is a big force behind the upsurge of construction in the South.

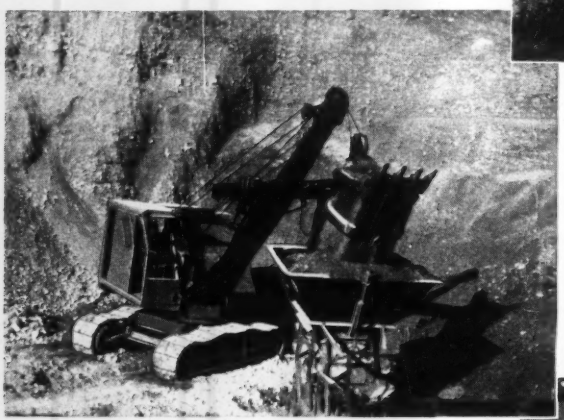
Movement from farms into cities is the most important form of migration with each region. The growth of southern industry has turned increasing numbers of farm laborers into urban industrial workers. The result: greatly increased requirements for urban housing and for all kinds of community services.

Migration from farms to towns and cities is a long-run movement. The farm population hit its peak in 1916. Since then, it has declined by close to 25%—while the total population was rising by about 50%.

SNAPPY swing
QUICK control
EASY operation
FINE balance

add up to accurate spotting of buckets with a BAY CITY

Whether you are loading bins and trucks or dumping on a spoil bank, the balanced design and easy flow of power of a BAY CITY will speed your materials handling and excavating operations . . . increase your profit possibilities.

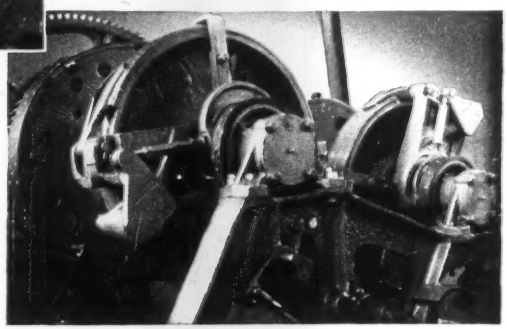


With shovel, dragline or clamshell, the snappy swing, quick control, easy operation and fine balance of a BAY CITY make it easy to spot the bucket accurately and speed the digging cycle. No single factor makes the BAY CITY so long-wearing . . . so long lasting. It is a combination of heavy-duty design, construction and operating features which have made so many BAY CITY owners *repeat buyers* for up to 35 years. See your BAY CITY dealer for the full story or write today for catalog.

BAY CITY SHOVELS, INC.
BAY CITY, MICHIGAN

CHECK THESE FEATURES

- √ Fully Convertible
- √ Long, Wide Crawlers
- √ Alloy Cast Bases
- √ Tandem Drums
- √ Power Booster Clutches
- √ High Line Speeds
- √ Wide Vision Cab
- √ Pin-Connected Boom



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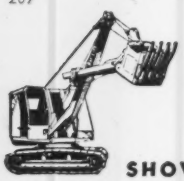
Power booster clutches—single adjustment ▶



BAY CITY

SHOVELS • CRANES • HOES • DRAGLINES • CLAMSHELLS

UNIFICATION OR MERGER?—The leaders of the American Institute of Architects are pushing hard for closer cooperation between architects and civil engineers—but the rank-and-file has already decided the answer will be more drastic than that:

Architects must become engineers, else the engineers will become top dogs in design as well as construction. Engineers cannot ignore esthetics.

Head man on a modern building job must know both architecture and engineering—be a coordinator of technical and financial activities.

MORE THAN MEETS THE EYE—The gist of corridor confabs at AIA's annual meeting last week—and the somewhat caustic comments of speakers at sessions—confirms the rank-and-file thinking.

The thinking goes this way: The day of the "pure scientist" in construction is over. No architect can afford to train in one field only, the art of building is far too complex. Knowledge of materials and methods and costs are as basic to good, economical design as is knowledge of proper use of space.

MOVE UNDERWAY—The move toward unification is already underway. It got a strong boost with the architect-engineer contracts of World War II. Many a firm today calls itself architect-engineer, and growth of firms ready to deliver "package" building jobs is another evidence.

And the builders are in it, too. They went so far at AIA's session (Alfred Levitt, for one) as to suggest dropping all architects, instead require builders to take a year of training in construction methods. Architects, said the homebuilders, are too prone to set standards to fine details, don't know enough about designing for practical use of mass labor.

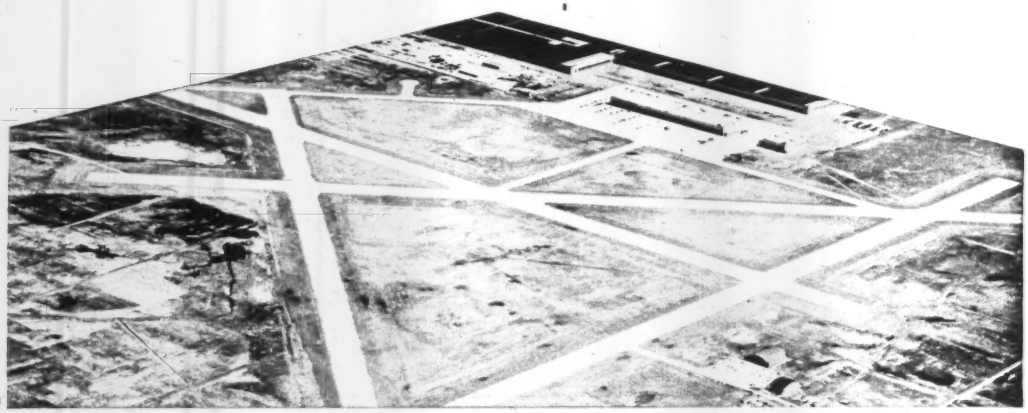
STEEL HITS CONCRETE—And while the architects considered professional aspects of their work, they listened closely to reports from the industry that will bring new demands for ingenuity:

The month-old steel strike is hitting hard at an obvious substitute for steel—reinforced concrete.

Reinforcing bar fabricators were already at the hand-to-mouth stage in many areas, were already using stocks of plain bars to fill holes left by rapid use of deformed ones. Because of time delays there seemed little hope that foreign shipments could fill the gap (though foreign steelmen figured that even resumption of U. S. production full-scale would still leave a lot of catching up to do). But it is certain, substitutes will get heavier play.

IN THIS ISSUE—Congress rushes construction money bills toward completion (p. 21) . . . Rainfall, not less outflow is causing damage along Great Lakes shorelines (p. 26) . . . ASTM has busy sessions (p. 29) . . . AIA begins to close ranks with engineers (p. 30) . . . Test tracks promise burst of new know-how (p. 34) . . . A fresh look at three lighting problems (p. 40) . . . Activated sludge process gets a new twist (p. 45) . . . California strikes snarl construction (p. 49) . . . Louisville leaders didn't want A-bomb plant (p. 56) . . . Norfolk, Va., fights slums (p. 60) . . . India and Pakistan plan new use of Indus River waters (p. 66) . . . Concord, N. H. is staffed by engineers (p. 75) . . . HHFA recommends realistic roof loading (p. 81) . . . Cheap atomic reactor developed for schools (p. 82) . . . New York's concrete industry does a housecleaning (p. 101) . . . Prestressed concrete costs compared for bridges (p. 104) . . . Portable dryer-mixer patches asphalt or concrete breaks (p. 123) . . . Editorials (p. 128).

8 winters . . . impact of countless high-speed landings prove DURAPLASTIC'S durability



O'Hare Field, Park Ridge, Ill. Designed and supervised by U. S. Engineers and the Austin Company. Contractors: Standard Paving Co., White Consolidated Inc., and Thos. McQueen Co.

● For eight years, airplane tires have smacked against the Duraplastic-paved runways at O'Hare Field in Chicago. And during 8 winters, innumerable freezing-thawing cycles have severely tested the surfaces. Typically, against time, traffic and weather, the concrete made exclusively with Duraplastic* has remained durable and highly scale-resistant. Here's why:

Duraplastic cement minimizes bleeding and segregation in concrete and thus fortifies it against the scaling action of de-icing salts and damaging effects of freezing-thawing weather.

Whether used for paving or other construction, Duraplastic air-entraining portland cement makes better concrete. Less mixing water is needed for a given slump. The resulting concrete is more workable, more plastic and more uniform. It dumps, spreads and finishes easily.

YET DURAPLASTIC* COSTS NO MORE

It sells at the same price as regular cement and requires no unusual changes in procedure. Complies with ASTM and Federal Specifications. For descriptive booklet, write Universal Atlas Cement Company (United States Steel Corporation Subsidiary), 100 Park Avenue, New York 17, New York.

OFFICES: *Albany, Birmingham, Boston, Chicago, Dayton, Kansas City, Minneapolis, New York, Philadelphia, Pittsburgh, St. Louis, Waco.*

*"Duraplastic" is the registered trade mark of the air-entraining portland cement manufactured by Universal Atlas Cement Company.

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ATLAS® **DURAPLASTIC**

AIR-ENTRAINING PORTLAND CEMENT

Makes Better Concrete at No Extra Cost

"THE THEATRE GUILD ON THE AIR"—*Sponsored by U. S. Steel Subsidiaries—Sunday Evenings—September to June*

AEC funds slashed by House group

Congress rushes action on appropriations for construction as adjournment approaches

The House Appropriations Committee has sharply slashed funds for atomic energy expansion as punishment of the Atomic Energy Commission for failing to be specific about what it intends to build.

In cutting outlays for expanding production from $3,018,602,000 to $1,450,000,000, the committee told AEC:

Go work out a program using competitive bidding based on plans and specifications, and come back later and we'll consider giving you the rest of the money.

The committee felt that the commission was far too vague in asking for the largest single appropriation in history for atomic energy.

Funds requested for fiscal 1953 are in connection with a program calling for $3.9 billion for building new and additional facilities throughout the atomic energy production program. AEC Chairman Gordon Dean had testified that "the setting in which this request is made results from recent revolutionary developments in the field of atomic weapons technology."

Dean pointed out the commission would actually spend only $600 million of the request in fiscal 1953. For that reason the committee felt it was not hampering any planned expansion in cutting the request in half.

• **Wants competitive bidding**—The Appropriations Subcommittee for Independent Offices, of which Rep. Albert Thomas is chairman, sounded a warning that it would not continue to write virtual blank-check appropriations for the commission unless it mends its ways.

"The committee has for the past three or four years," the report stated, "urged the Atomic Energy Commission to use competitive bidding based on plans and specifications. Although the commission and its predecessors have been in the construction business for approximately ten years, the commission feels that it cannot work from plans and specifications. On this point, the committee disagrees. . . .

"The committee wishes to reemphasize its conviction that very substantial sums of money will be saved with little or no loss of time if the commission will proceed promptly to formulate a specific program based on engineering plans and specifications, and it invites the commission, after it has followed this procedure, to return to consider the remainder of the financing of the program."

• **Reclamation money**—In passing appropriation for the Interior Department for 1953, the Senate increased appropriations for 28 reclamation projects by $30 million over the amount voted by the House. The House had cut the budget request of $196,770,000 to $153,355,000 and the Senate action raised it to $183,406,531. This will permit all 1953 programming to go ahead on schedule. (See table below.)

Virtually the only change made in the Interior appropriations on the Senate floor was increasing construction funds for the Bureau of Indian Affairs by $6.5 million over the $24.8 million approved by the committee. The Senate also approved $19,670,000 for construction of roads, trails, and parkways for the National Park Service.

• **Housing set back**—The conference report on Appropriations for Independent Offices was recommitted to conference with instructions. Although House conferees succeeded in trimming appropriations $24 million below the $6,254 million voted by the House, a motion to recommit called for the House conferees to go back to

Bureau of Reclamation Construction Projects

Project	Budget estimate fiscal year 1953	Amount allowed by House	Amount allowed by Senate
Alaska: Eklutna	$13,000,000	$13,000,000	$13,000,000
Arizona: Gila	5,582,000	5,582,000	5,582,000
Arizona-California-Nevada: Colorado River front and levee system	2,007,000	2,007,000	2,007,000
Arizona-Nevada: Davis Dam	1,754,000	1,754,000	1,754,000
California:			
All-American Canal	420,000		1,419,000
Cachuma	6,270,000	6,270,000	6,270,000
Central Valley	10,000,000	37,940,000	38,780,000
Kern River	15,000	15,000	15,000
*Solano			3,000,000
Colorado: Colorado-Big Thompson	18,000,000	18,000,000	18,000,000
Idaho: *Minidoka project, north side pumping division			150,000
Idaho-Wyoming: Palisades	10,000,000	10,000,000	10,000,000
Montana:			
Buffalo Rapids, first division	222,000	222,000	222,000
Buffalo Rapids, second division	111,000	111,000	111,000
Hungry Horse	13,245,000	13,245,000	13,245,000
Sun River	40,000	40,000	40,000
New Mexico:			
Middle Rio Grande, emergency channelization	2,050,000		2,050,000
Tucumcari	204,000	204,000	204,000
Vermejo			410,000
New Mexico-Texas: Rio Grande	150,000	150,000	150,000
Oklahoma: W. C. Austin	30,000	30,000	30,000
Oregon: *Savage Rapids Dam			700,000
Oregon-California: Klamath	368,000	368,000	368,000
Utah:			
Provo River	2,310,000	2,310,000	2,310,000
*Weber Basin			1,350,000
Washington:			
Columbia Basin	20,000,000	20,000,000	20,000,000
Yakima:			
Roza division	106,000	106,000	106,000
*Kennewick division			1,500,000
Wyoming:			
Eden	760,000	760,000	760,000
Kendrick	4,100,000	4,100,000	4,100,000
Riverton	437,000	437,000	437,000
Shoshone	216,000	216,000	216,000
Various:			
Missouri River Basin	53,031,000	44,146,400	54,940,000
Rehabilitation and betterment	2,342,000	2,342,000	2,342,000
Subtotal	$196,770,000	$183,355,400	$205,568,000
Reduction to offset 1952 unobligated balances available in 1953		−30,000,000	−22,161,469
Total construction and rehabilitation	$196,770,000	$153,355,400	$183,406,531

* Funds to initiate construction.

MORE FUNDS for defense housing were voted promptly by the House Banking and Currency Committee. Discussing the features are (left to right): Alan E. Brockbank, president of the National Association of Home Builders; Raymond M. Foley, administrator of the Housing and Home Finance Agency, and William J. Hallahan, clerk to the committee.

conference and insist on the 5,000 public housing starts voted by the House in place of the 35,000 authorized in conference.

The Senate has approved 45,000 starts, and the Administration had requested 75,000. The motion would also provide for insisting on House provisions for construction of Veterans Administration hospitals. Funds for five hospitals amounting to $87 million were stricken out in conference. Two of these hospitals were to be in California, two in Ohio, and one in the District of Columbia.

There was no schedule at weekend for taking the bill back to conference, but House and Senate leaders were hopeful that differences could be worked out satisfactorily before the end of this week.

• **Highways action**—President Truman signed the Federal Aid to Highways Bill providing for $1,385 million for fiscal 1954-55. Truman failed to denounce the bill when signing it, although he had asked for a cutback from the $500 million a year voted last year for federal aid to primary, secondary and urban roads.

In raising the amount to roughly $575 million for each fiscal year, conferees felt they were providing just barely enough to continue work at the same level of last year's authorization in view of inflation that has taken place in the last year.

• **Judicial review**—The Wunderlich Bill (ENR June 12, p. 17) ran into a snarl when Sen. Douglas (D., Ill.) asked a question involving Justice Dept. opposition to the measure. To clear up the difficulty, the hearings before the Judiciary Committee are being printed for distribution to all members of the Senate. The bill then will be called up again for floor debate, but this action can hardly come until after the July political conventions. Majority sentiment in both houses favors passage of the bill.

• **Overseas bases cut**—The House cut funds for military construction from the $2,758,318,000 it authorized last week to $2,186,499,840. This is not the final word, however, on what Congress will provide for overseas bases and other military construction for the next fiscal year. The Senate Armed Services Committee has not completed action on an authorization bill and indications are that spending authority will be cut far below House action. Some military observers thought the Senate cut in authorization might run as deep as $1 billion, much of which would come in overseas air bases.

As recommended by House Appropriations Committee, the construction money would be divided as follows: Army, $600 million; Navy, $386 million; Air Force, $1,200 million.

In acting on supplemental appropriations for other federal agencies, the House committee provided $50 million for the construction of defense housing, the same amount as authorized by the Senate. Funds heretofore appropriated are expected to provide about 9,300 dwelling units and the supplemental appropriation will raise the overall total to about 20,000 units. The budget request was for 35,000 units.

The committee voted to increase mortgage-purchase authority of Fannie May to $900 million, contingent on passage of pending S. 3066 before the House Banking Committee. The committee allowed $4 million for Alaskan housing, $1 million under budget request; and $8 million for slum clearance and urban redevelopment, $2 million under the request.

The House cut to $85 million supplemental funds for Tennessee Valley Authority. The Appropriations Committee had voted $150 million to provide funds to begin construction of steam electrical-generating plants, transmission lines and other facilities necessary to provide power for the expansion program of Atomic Energy Commission. The program provides for the construction of ten additional or new generating units with a rated capacity of 1,710,000 kw. Total estimated cost of the program is $305 million.

Overriding its Appropriations Committee, the House voted $91,570,000 to help school districts in defense areas. It added to a request of $80 million by Federal Security Administration for school construction, another $11,570,000 for payments to school authorities for operation of existing schools.

• **Moroccan air base probe**—An interim report on the Moroccan air-base investigation may be issued this month by Sen. Lyndon Johnson's Preparedness Subcommittee. The committee has questioned additional air-base witnesses at about ten closed sessions since Atlas Constructors in open hearing refuted charged of mismanagement and graft (ENR May 15, p. 21).

Surprisingly, neither Col. George Derby nor Lt. Col. Leonard Haseman has been invited to testify. As district engineer and executive officer, these men ran the Moroccan air-base operation for the Army Engineers until early March. The two officers have been standing by, awaiting an invitation, for seven weeks.

Additional hearings will be necessary to complete the investigation. Hearings will be resumed after the convention recess. The final report won't be ready until fall.

• **Military building**—The House subcommittee investigating military construction, last week released a report criticizing some phases of military construction. Here are some that were listed:

• Offut Field, Omaha, Nebraska—a delay of nine months occurred because of the inability of the Air Force to determine whether the Global

Communications Projects' center building should be a separate structure. The report noted that an error was made in the location of a receiver building which resulted in a waste of $80,000.

• Sunflower Ordnance Plant—rehabilitation of the Sunflower Ordnance Plant at Lawrence, Kansas, cost more for overtime labor costs than the entire original contract price.

• Duluth Air Base—changes in specifications for work on the Duluth, Minnesota, Air Force Base resulted in bids from only two contractors. The report said the last of several changes was made four days before the bids were to be opened.

• Nellis Air Force Base—a $1,701,598 contract for runways at Nellis Air Force Base, Las Vegas, Nevada, was awarded when it was known the work would not be carried out as called for in plans.

• Incomplete plans at Mountain Home—pressure was put on the Walla Walla, Washington, office of Army Engineers to obligate funds for rehabilitation of the Mountain Home, Idaho, Air Force Base, "without the benefit of completed plans and specifications."

• Boiler room of mess halls at the Amarillo, Texas, Air Force Base had to be redesigned because they were too small for the boilers.

• The government might have saved $300,000 by eliminating frills on a $6-million project at the Naval Air Technical Training Center at Memphis, Tenn.

• Keesler Air Force Base at Biloxi, Miss., was cited as an example of the excess cost of a cost-plus-a-fixed-fee type of contract as compared with a negotiated lump-sum contract.

• **Barracks cutback**—A House watchdog committee reported last week the Air Force has agreed to cancel plans for nearly $100 million worth of "unnecessary" barracks. An expenditures subcommittee under Rep. Hardy said it discovered the extra projects during a study of 105 major air bases across the country. Air Force officials agreed with the group's analysis, the report said, and have started action to eliminate the projects.

• **Controls hit**—Substantial modification of the Economic Controls Bill appeared imminent last week as House and Senate conferees went to work on a measure which would have thrown out of it price controls on all unrationed or unallocated commodities. This would kill price controls.

The bill would end on June 30, the President's present authority to put controls on consumer credit, including housing's battered "Regulation X." It would also continue, for one year, the President's allocation and priority powers over scarce materials, but puts new restrictions on them providing for decontrol.

A watered-down controls bill went to conference committee. But some of its provisions will not be modified so drastically as the House bill proposes, if the committee irons out differences between the House and Senate versions promptly.

• **Investigation nears end**—Within the next few months a series of critical reports on federal public works policy will be issued by the House Public Works Committee. These reports will deal with construction of hydroelectric projects.

Although the recommendations come too late to be translated into any kind of legislative action by the present Congress, they will form a basis for future attempts to bring some uniformity to the government's helter-skelter civil works policy.

Since late March a subcommittee headed by Rep. Robert E. Jones, Jr. has been collecting facts on which the reports are to be made. A series of public hearings and staff studies were filling several volumes. Already the subcommittee staff is commencing work on the final reports.

From the record it compiled, it appears the reports will cover cost allocations on multi-purpose projects, cost estimates of federal construction agencies, and de-authorization of some government building programs.

Expected to come in for sharp criticism is the cost estimates of the Army Corps of Engineers and the Bureau of Reclamation. Preliminary cost estimates of huge waterway jobs have sometimes represented less than half of the final costs of these projects.

De-authorization of hundreds of projects—many of which have been on the books for years but no work done on them—presents another problem. The subcommittee may suggest some method of removing them from the books, reducing the backlog of projects charged to the Corps of Engineers.

Reclamation rejects irrigation offer

A Kings River Water Association offer of $10 million in lump-sum payment for costs chargeable to irrigation from Pine Flat Dam has been flatly refused by Richard L. Boke, Regional Director of the Bureau of Reclamation.

In a letter to the association, headquartered at Fresno, California, Boke said that his organization could not consider any figure less than $14,250,000.

"I am not authorized by the Secretary of the Interior, nor do I consider it in the public interest, to accept any lesser figure," Boke said.

Under terms of the agreement under which Pine Flat Dam was started in 1947 as a Corps of Engineers' project, the dam is to be operated only for flood control until arrangements for repayment of irrigation benefits are made between the Bureau of Reclamation and local water users.

The 1947 agreement specified only that the repayment should not be more than $14,250,000 nor less than $10 million.

The $10-million figure was the estimate of the value of conservation benefits set at that time by the State of California and the water users; the higher figure is the bureau's. The Corps of Engineers estimate was some $13 million.

Boke pointed out that the $10-million offer made by KRWA is the same as was made when estimated costs of Pine Flat Dam were considerably less than present estimates.

Cost of the dam, on the Kings River near Fresno, was estimated originally by the Corps of Engineers at $36.4 million. Present estimates are nearly $50 million.

VA takes new action on airport problem

The Veterans Administration has issued a guide to its field offices to serve as a "general yardstick" for appraising reasonable values on homes built near airports.

The VA, which directed its offices throughout the country to submit to Washington all loan appraisals on GI homes built within four miles of an airport (ENR June 19, p. 138), has handed the problem back to the field offices which will now make the appraisal decision with the new "guide" as an aid.

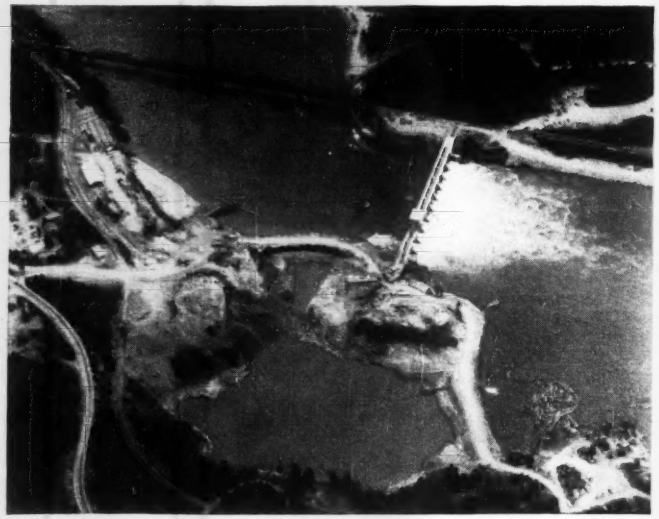
VA officials said the new guide is "basically similar" to one issued by the Federal Housing Administration in July, 1951.

Sharp bidding catches Engineers by surprise

Army Engineers in Sacramento, California, had a pleasant surprise recently when bids were opened for drilling and grouting work on the Pine Flat Dam on the Kings River.

The low bid of $352,546 by the Selby Drilling Corp., of Boise, Idaho, was far under the government's estimate of $589,855—figured without profit to the contractor.

In fact, five of the six bids submitted for the job were under the Engineers' estimate.



AT ALBENI FALLS DAM excavation for the powerhouse has started.

Court fight mars dam's debut

Another dam has gone into action in the federal government's Columbia River Basin power and flood control program—but it was immediately caught in a court battle.

Albeni Falls Dam on the Pend Oreille River between Priest River, Idaho, and Newport, Wash., has begun to fill. Spillway gates began lowering June 10, several days ahead of original schedule, to impound 1.14 million acre-ft of water. After control of the reservoir (consisting mainly of Lake Pend Oreille) was gained, gradual filling of the reservoir was soon started.

Filling will continue until elevation 2062.5 is attained—sometime during the first part of August. Late in the fall, some of the water will be released for downstream power and navigation. It will add 100,000 kw to Pacific Northwest supplies this year. Minimum elevation for the reservoir has been set at 2049.7.

• **Injunction looms**—But the people of the city of Sandpoint, Idaho, are not happy. The city is seeking an injunction which would prevent impounding of the water. Its petition has been filed in federal court at Boise, Idaho, where Federal Judge C. A. Clark has set July 8 for a hearing at Pocatello on why the injunction should not be granted.

Sandpoint is dissatisfied because of the flooding out of a bathing beach and park. Since the city is in the center of a resort area on the fish-famous Lake Pend Oreille, recreation is important. Sandpoint doesn't want anything to interfere with its lucrative tourist trade. It also fears possible flooding of the city's sewage disposal plant.

The government has planned to restore recreation facilities eventually but finds it impractical to do so this summer. The city wants the work done right now, and asks $1,000 damages for each day the reservoir gates are closed.

Meanwhile, excavation has been started inside the right-channel cofferdam for the Albeni powerhouse foundation. Construction of the powerhouse will be started in mid-summer to be completed by Aug. 1, 1954, according to the Army Engineers. Power output to be on the line by August, 1955, will be on a rated capacity of 42,600 kw.

Maryland test road to be resurfaced

A contract has just been let for resurfacing the mile-long section of U. S. Route 301 near La Plata in Maryland that was used for the highway-load test of the Highway Research Board in 1950. The board's final report on the test operation was issued a few weeks ago (ENR May 22, p. 80).

The test runs with loaded trucks were made in the latter part of 1950. Last year extensive studies were made on the pavement and the subgrade. As some sections of the concrete pavement had been damaged and depressed by the more heavily loaded trucks, a preliminary repair job was done before the pavement was put back into service late last year. That cost $9,918.

The present contract is for $24,610 and calls for three layers of bituminous concrete, one to level out the depressions resulting from pavement failure or pumping during the test, and two surfacing courses.

Pollution control plans altered for Raritan

The Middlesex County Sewerage Authority, New Brunswick, N. J., is going to proceed with plans for construction of a trunk sewer to end pollution of the Raritan River despite refusal of two of the largest potential users to participate in the program (ENR June 5, p. 40).

Plans for the $30-million project will be modified and new cost estimates given to the 21 eligible municipalities and industrial concerns expected to participate.

Officials at the plants of the Calco Chemical division of the American Cyanamid Co. and the Johns-Manville Corp. which refused to join the program, said they plan to build their own sewerage and waste treatment plants.

Los Angeles council moves to drop housing project

The Los Angeles City Council last week asked that a decision by the California Supreme Court, holding that a public housing project cannot be terminated, be stayed pending filing of an appeal to the U. S. Supreme Court. The Supreme Court refused to stay the decision.

The case involves interpretation of the Federal Public Housing Act of 1937, and whether the City Council has the authority to terminate a project once begun (ENR June 12, p. 22).

Double-deck highway planned in New Jersey

Gov. Alfred E. Driscoll has disclosed that a section of State Route 21 in Newark, N. J., will be built as a two-tier road. The work will cost an estimated $10 million and construction is expected to get under way within three months.

The two-tier structure is necessary, the governor explained, because of the state's inability to obtain land needed to widen the existing highway. The Passaic River borders the route on one side, and a portion of the land on the opposite side is occupied by a cemetery.

Water policy proposal nears finish

After months of conferences, the Budget Bureau hoped to deliver to the White House soon its completed draft of a proposed water policy law. The bureau's draft bears no resemblance to the legislative proposal submitted to the President early in 1951 by his Water Resources Policy Commission, headed by Morris L. Cooke (ENR, Feb. 21, p. 29).

Not much has been said about the drafted bill. But two things are fairly certain about it. It won't attempt any serious reshuffling of federal functions on water resources. Truman's decision to leave civil works with the Army Engineers killed that possibility.

An improvement in the present system of federal inter-agency commissions will certainly be proposed, however. The bill probably will call for creation of basin commissions, with chairmen appointed by the President. Representatives of the states on these commissions also would be presidential appointees, for this reason: lawyers say that appointment by anyone but the President would be unconstitutional.

The bill also is expected to adopt the principle of a federal board of review to coordinate the nation's water resources programs. This board would review all basin proposals and make recommendations to the President.

• **Conflict**—Budget Director Frederick J. Lawton had a score of conflicting technical opinions to resolve before the final draft could be completed. Federal agencies became tighter about compromising differences of opinion as the draft reached final stages. In earlier discussions they had been liberal about accepting principles such as partial repayment by beneficiaries for benefits like flood control.

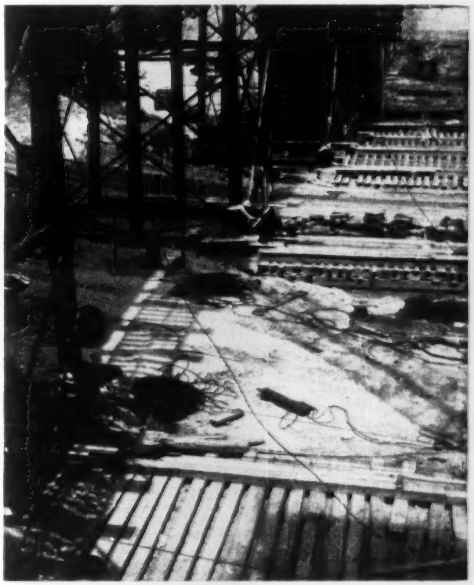
But as writing of the proposed bill approached finality, their generosity dwindled to zero when it came to accepting practical application of principles previously approved.

An undermanned but able staff headed by Edward J. Ackerman, chief of Natural Resources in the public works branch of the Fiscal Analysis Division, tried earnestly to compromise these difficulties.

Through White House Aide David Bell, and Budget Director Lawton, President Truman has kept in touch with the progress of the drafting. In the main, the bill as submitted will undoubtedly meet his approval. He may require a few minor changes calling for more conferences.

• **Future uncertain**—Date of delivery to Congress hinges on two decisions. First, Truman will decide whether this is a politically opportune time to submit the proposed legislation. Nobody expects congressional action at this session. But Truman wants to complete his part of the job on water policy legislation before he leaves office. He is sure to send a bill to Congress this year—probably this month.

Another tough decision has to be made before the bill is dispatched. Congressional committees are getting more and more jealous of their jurisdictions. At least three committees—Public Works, Interior and Agriculture—have heavy interests in the proposed bill. Each of the three is a little miffed that the President has not already named it to receive the measure.



500-TONS OF STEEL FALSEWORK and forms for a 319-ft long concrete arch were moved recently in Pasadena, Calif., without dismantling the assembly. The spectacular feat was accomplished by the Guy F. Atkinson Company as part of a $3,389,650 contract for construction of the Colorado Freeway Bridge for the California Division of Highways (ENR April 24, 1952, p. 71, and Aug. 9, 1951, p. 40). The huge assembly was moved laterally some 55 ft by workmen operating 24-power hand winches that reeled cable from a 6-part line—making a total working advantage of 144 to 1. Such winches were located on each of the 10 transverse bents of the falsework.

The job saved the contractor an estimated 6 or 7 weeks over the time that would have been required to dismantle and re-erect the form assembly. Still to be moved are similar falsework systems for smaller—230-ft span—approach arches. Similar savings on these arches are anticipated.

INUNDATION from rising lake levels and lake storms causes creeping paralysis to both industry and private homes at Green Bay, Wis. Emergency corrective measures call for temporary dykes and dewatering the area by heavy pumping.

Rainfall—not less outflow creates Lakes shore damage

Rainfall above normal, not man-made changes in the amount of water flowing into or out of the Great Lakes, is the cause of extensive damage to shore-front property along the Great Lakes.

That is the conclusion of a preliminary report on the damage just issued by Col. W. P. Trower, division engineer, Great Lakes Division, Corps of Engineers. Owners of shore-front properties damaged by flooding or wave action had claimed that the present high levels of the lakes is due to decreased diversions of water from Lake Michigan at Chicago for dilution of sewage, to a dam built many years ago across one channel at the outlet of Lake Ontario, and to the diversion of water into Lake Superior from the Hudson Bay drainage system for power and pulpwood movements (ENR May. 15, p.25; May 22, p.27; June 5, p.27).

As a result of abnormally high rainfall in recent years, levels in Lake Erie and Lake Ontario set new high records in May of this year. Lake Superior is two feet below the record set in 1876 and Lake Michigan and Lake Huron are about 1½ ft below their high record of 1886.

• Diversions have little effect—About 5,000 cfs of water is being diverted from the Hudson Bay drainage into Lake Superior at the present time. This diversion has little effect on the level of Lake Superior as a like amount is used for power development at the outlet in plants on the Canadian side of the border at Sault Ste. Marie.

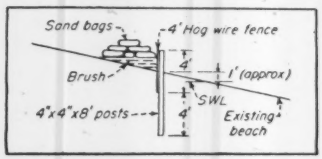
Complete cessation of these diversions into Lake Superior would make a reduction of less than half a foot in the level of Lake Michigan and Lake Huron at the end of 10 years, the report states.

Diversion at Chicago for sanitation purposes has been limited to 1,500 cfs since 1938, by Supreme Court decree. Previously it had been up to 9,000 cfs. Pumping from Lake Michigan at Chicago for water supply brings the current total diversion at that point to 3,100 cfs. This cuts the Michigan-Huron level about 0.23 ft.

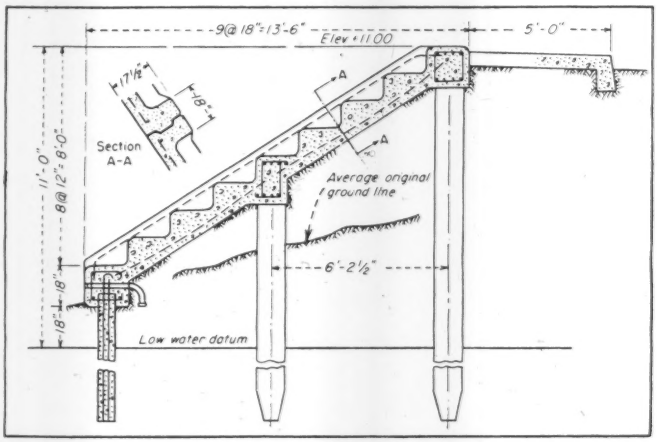
Concerning the dam at the outlet of Lake Ontario, the report says that its removal would reduce the lake level 0.56 ft by the end of the first year, when the total effect would have been realized. Court action to compel removal of the dam was begun in Washington early in June by the Lake Ontario Landowners & Beach Protection Assn. As the dam is in Canada, the prospect for that action appears dim.

• Increased diversion proposed—Increased diversion from Lake Michigan is a possibility within the near future. Recently the House Public Works Committee approved legislation to permit increasing diversion into the Chicago River from 1,500 to 2,500 cfs.

Such an increase would help clean up the Illinois waterway but it would have little effect on the lake levels. The Army Engineers estimate that stepping the diversion up to the 10,000 cfs design capacity of the Chicago Sanitary and Ship Canal would reduce the levels of Lakes Michigan



EMERGENCY shore protection of sand bags, brush and fencing can be built for as little as $5.25 per lin ft.



PERMANENT sea wall construction of this type is recommended where property owners can afford its cost of around $140 per lin ft. It will effectively halt erosion along lake shorelines.

and Huron by 0.34 ft at the end of three years. If continued for 10 years, it would lower these two lakes 0.52 ft and would lower both Lake Erie and Lake Ontario by 0.33 ft. Such a reduction would be opposed by shipping interests if continued into a period of lesser rainfall and declining lake levels.

• **Study of regulation proposed**—A long-range study of the possibilities for more complete regulation of the levels of the Great Lakes has been proposed by Col. Trower to Lieut. Gen. Lewis A. Pick, Chief of Engineers, for consideration by the Board of Engineers for Rivers and Harbors. Col. Trower's report also recommends a study of means for minimizing the damage resulting from high lake levels. Favorable action by that board would pave the way for a recommendation by General Pick that the House Committee on Public Works authorize the proposed studies. That committee ordered the present report.

The report finds that the two means of reducing damage to shore property are: (1) By lowering the high stages of the lakes and (2) by providing protective measures. No estimate is available on the cost of this construction. The only practicable means of lowering the high stages sufficiently to reduce damage to shore properties is by regulation of the levels of the lakes. But any such regulation necessarily must take into consideration both navigation and power generation as well as the effect on shore properties.

Extensive studies will be needed to develop a plan of lake regulation.

As a temporary measure, the International Lake Superior Board of Control has just ordered a reduction in the outflow from Lake Superior, where a large volume can be stored without injury to shore property.

• **Damage due to flooding**—Col. Trower's preliminary report places the total damage to shore property during the last 12 months at $61 million. Damage by wave action was estimated to be roughly $50 million. That from inundation, $11 million. This damage, the report states, can be reduced by properly designed protective measures and local flood control works.

This country's beach-erosion laws provide for cooperative fede-al-state studies of shore protection on publicly owned property and for federal participation in the cost of such protection. Private-property owners, however, can't expect financial assistance from the government in constructing shore protection against erosion. There is no provision by law for such federal participation.

Consequently, the report advocates that private property owners along the lake shores go ahead with their own protective construction, integrating it as far as possible in the respective state's overall plan.

To aid this program, and to implement privately-built shore protection, Col. Trower's report contains detail plans and estimated costs of both emergency and permanent erosion-control installations that can be built by private property owners.

• **Further rise anticipated**—Emergency installations are predicated on a further rise this year of 0.5 to 1.0 ft above the May levels.

Three of the suggested schemes for minimizing the effect of the high levels entail driving a row of 4x4-in. by 8-ft posts along the shore in front of the area to be protected. A 4-ft strip of hog wire is tacked at the top of the posts, and backed up either with brush topped with sandbags filled with sand and cement, or by sandbags alone. The estimated construction costs of these installations run from $5.25 to $6.00 per lin. ft.

Measures suggested in the report for permanent erosion protection include a reinforced concrete stepped-type seawall on concrete piles costing $140 per lin. ft., and cellular steel seawalls at $200 per ft. Three types of groins are suggested: rubble mound at $30.60 per lin ft; cantilever steel sheetpile groins at $34.50 per ft; and gravel-filled cellular steel groins at $80.50 per lin ft.

A final recommendation of the Army Engineers would safeguard future construction along the lake shores. They suggest the enactment of appropriate laws by the states and municipalities which would control construction in those areas subject to wave action or shoreline recession, and in the flood plane of the Great Lakes.

Comparison of Lake Levels

Lake	Average Level 1860-1951	Highest Monthly Average Level	Highest Monthly Average Date	Monthly Average May 1952
Superior	602.21	604.05	Aug. 1876	602.73
Michigan-Huron	580.57	583.68	June 1886	582.30
Erie	572.31	574.69	May 1952	574.69
Ontario	246.00	249.19	May 1952	249.19

Note: All levels are in feet above mean tide at New York, 1935 Datum.

NEWS BRIEFS

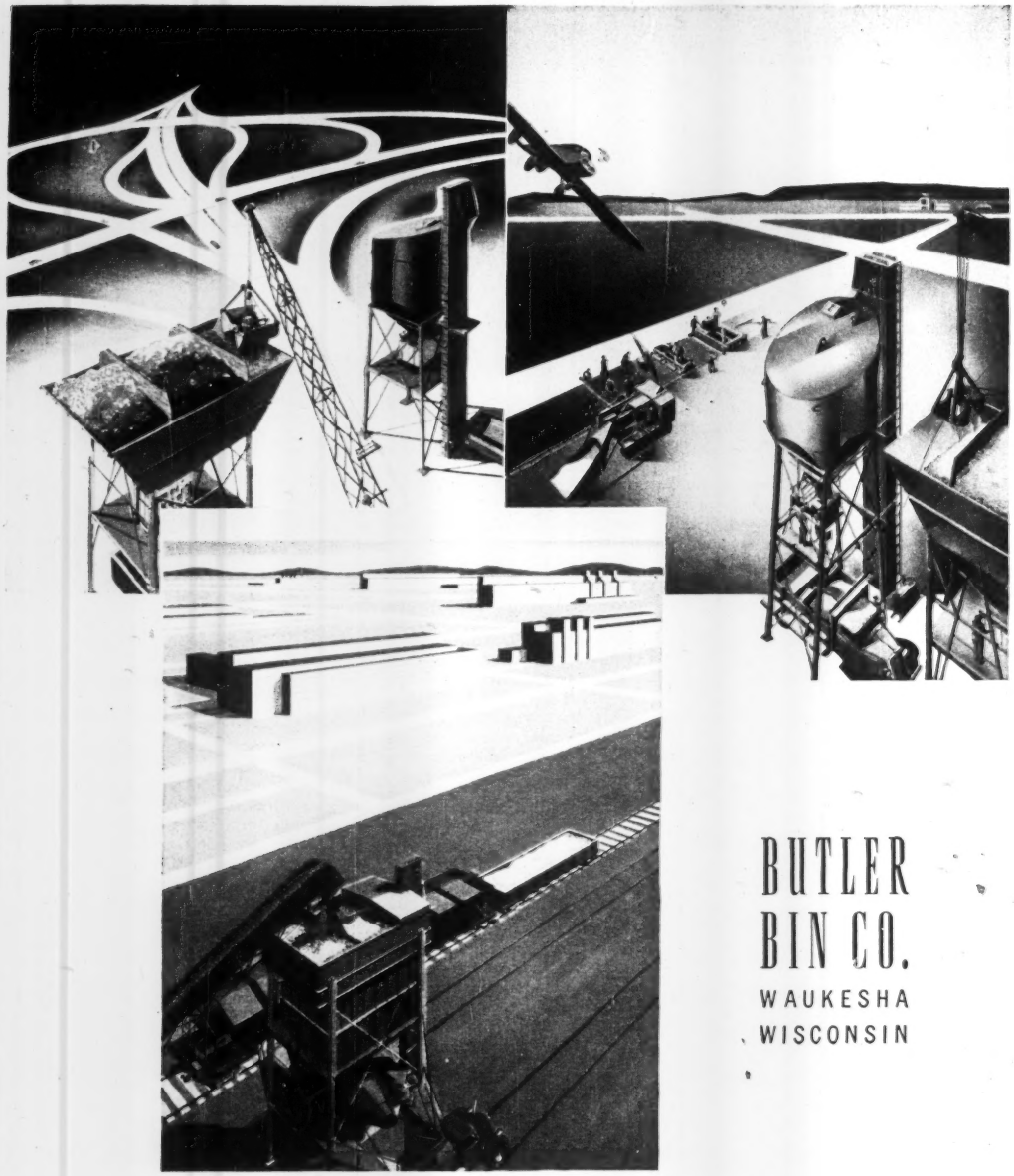
• **Heavy traffic**—The Ohio River carried an all-time record 56,191,535 tons of main-stem commerce in 1951, according to a report from the U. S. Army Engineers. This is 15% more than in the previous twelve-month period. It represents better than a ten-fold increase in tonnage in the past 32 years.

• **Highways active**—After unfavorable reports from two consulting engineering firms, plans for a multi-million-dollar toll highway from Cartersville, Ga., to the Tennessee line have been shelved. Both J. E. Greiner Co. and Coverdale and Colpitts, indicated estimated "traffic would not produce an annual amount of revenue necessary to create a complete self-liquidating facility at this time." . . . The New York State Thruway Authority expects to have the entire route of the superhighway from New York City to Buffalo under construction contract by the end of the current fiscal year.

• **Another round**—The Kentucky Court of Appeals has upheld the right of the East Kentucky Rural Electric Co-operative Corp. to construct a $30-million power generating plant on the Kentucky River, 25 miles south of Lexington. This concluded another round between the co-op and Kentucky Utilities Corp., the state's leading private power producer and distributor of electric power. Still undecided in the case is whether the co-op will be permitted to build 597 miles of transmission lines to carry the power which the new plant will produce.

• **Golf course confusion**—T. K. Finletter, Secretary of the Air Force, last week hinted that disciplinary action may result from the use of construction funds to lay out a golf course at McClellan Air Force Base near Sacramento, Calif. He told a House Appropriations subcommittee he is investigating a report by the General Accounting Office that $28,393 was spent or obligated for the golf course under the guise of a soil erosion project.

• **Perennial Quoddy**—President Truman last week endorsed a full survey into the economic feasibility of the proposed Passamaquoddy tidal power project in Maine. He said a new estimate of survey costs, following a study last summer with new sonar devices, is $3 million compared with an estimate of $3.9 million which was made in 1950.



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New production records for the world's largest construction projects are today attained through important engineering advances in automatic operation offered by BUTLER equipment.

ASTM celebrates 50th anniversary with big technical program

- **Specifications for many materials approved**
- **Ways to improve durability recommended**

There were a commemorative luncheon and dinner-dance, of course, but the American Society for Testing Materials celebrated its Golden Anniversary Meeting mostly with rolled-up sleeves. The celebrants held about 650 committee meetings and 36 technical sessions during the annual convention, June 23 to 27, in New York City.

Engineers came from all over the world to participate in the proceedings. Speaking for the visitors from abroad, Albert Caquot, famous French civil engineer, currently President of the International Standards Organization, Geneva, Switzerland, hailed the accomplishments of ASTM during the past half century.

• **Long history**—The society had started in 1898 as an American committee of the International Association for Testing Materials. Finding a separate organization necessary to carry out badly needed work on standardization of specifications in North America, the American members incorporated ASTM in Pennsylvania in 1902. The society now has 7,200 members.

Its first specification—for structural steel—was established in 1900. Today the society lists 1,850 standards. To continue this work, ASTM has set up a budget for 1952 of $629,000.

Retiring ASTM President, Truman S. Fuller, engineer in charge of Works Laboratory, General Electric Co., Schenectady, N. Y., cited also the achievements of the society in developing new methods of testing. He called attention to non-destructive methods of testing—radiography and ultrasonics, for example—as one of the outstanding developments of the past half century.

The society elected H. L. Maxwell president and N. L. Mochel vice president. Mr. Maxwell is Supervisor of Mechanical Engineering Consultants, E. I. du Pont de Nemours & Co., Inc., Wilmington, Del. Mr. Mochel is Manager, Metallurgical Engineering, Westinghouse Electric Corp., Philadelphia, Pa.

• **Weldable steel requested**—Typical of the 650 committees that met during the annual meeting, Committee A-1 on steel and its many subcommittees carried heavy agendas. Subcommittee II, on structural steel, for example, tackled about a dozen topics in one session.

Included was consideration of a request from the Office of Defense Mobilization for modification of Specification A7 for structural steel. This agency is looking for a standard steel more acceptable for use in welded buildings, at little or no increase in cost over present A7 steel. Government bureaus have been paying extras of about $15 or more per ton for special steels for welding.

Seeking a more ductile steel for easier and safer welding, proponents of the plan for revising A7 proposed setting of maximum limits on the carbon and manganese content of the steel. Producer members of the subcommittee, however, contended that the limits could not be met without an increase in cost. In view of the disagreement, the group voted to request the American Welding Society to study the problem and offer a recommendation.

Approved, however, was a new tentative standard—tentative methods and definitions for the mechanical testing of structural steel. It covers procedures to be followed and properties to be evaluated in tension and bend tests.

Subcommittee V of A-1, on steel reinforcement bars, recommended a revision of Specification for Wire Fabric for Concrete Reinforcement A185, to provide a method of test for the welding of the wires.

• **Other committee actions**—Committee C-9 on concrete and concrete aggregates proposed several new tentative test methods: for potential reactivity of aggregates, chemical test; for resistance of concrete specimens to freezing and thawing; and for flexural strength of concrete using a simple beam with center-point loading. The group also approved a tentative recommended practice for petrographic examination of aggregates for concrete and a tentative description of constituents of natural mineral aggregates.

• Committee C-3 on chemical-resistant mortars submitted a tentative specification for sulfur mortar, a product obtained by dispersing inert fillers, such as carbon or silica flour, in molten sulfur.

• Committee C-17 on asbestos-cement products recommended a tentative specification for asbestos-cement pressure pipe. Requiring the pipe to be manufactured for use at maximum operating pressures of 100, 150 or 200 psi, with a safety factor of 3.5; the specification designates the pipe as Classes 100, 150 or 200 in accordance with the pressure. It recommends that pipe for underground water distribution systems be limited to Classes 150 and 200.

• Committee D-8 on bituminous waterproofing and roofing materials advanced specifications for asphalt roofing surfaced with powdered talc or mica (D224-50T) from tentative to standard. The group also proposed tentative specifications for asphalt insulating-siding surfaced with mineral granules, for asphalt-base emulsion for use as protective coatings for built-up roofs, and for a method for testing asphalt insulating-siding surfaced with mineral granules.

• Committee D-4 on road and paving materials approved a tentative specification for preformed expansion-joint fillers for concrete (nonextruding and resilient types) (D544).

• Committee D-19 on industrial water recommended publication of an ASTM manual of industrial water, a project it had sponsored for the past five years. The manual includes chapters on uses, composition, treatment, sampling and analysis of water and water-formed deposits.

• **Durability holds limelight**—The 36 technical sessions held during the anniversary meeting covered a wide range of subjects bearing on the behavior of engineering materials. Durability of materials received heavy emphasis.

Among the outstanding papers of interest to the construction industry was one on atmospheric corrosion of low-alloy steels, by H. R. Copson of the research laboratory, International Nickel Co., Bayonne, N. J. It covered observations made on specimens exposed to the industrial atmosphere of Bayonne and the marine atmosphere at Block Island, R. I., from 1941 to 1950.

After nine years, the lowering of the surface level was only one mil or less for the better steels, Mr. Copson reported. Steels containing chromium tended to have fewer but deeper pits, whereas those with nickel tended to

have more but shallower pits. Alloying decreased both pit depths and the number of pits.

Data derived from these exposures confirmed the beneficial effect of fractional percentages of copper, of small amounts of phosphorus and of one percent or more of nickel. Additions of nickel produced low weight losses, and on long exposure these were particularly effective in decreasing pit depths. Chromium was instrumental in producing low corrosion rates. Manganese produced good results in the marine atmosphere.

G. M. Sinclair, research assistant professor of theoretical and applied mechanics, University of Illinois, Urbana, Ill., reported on a phenomenon affecting the fatigue resistance of some metals. Observers have noted that fatigue resistance may be improved by understressing followed by a process of gradually increasing the amplitude of the alternating stress in small increments—a procedure called coaxing.

Professor Sinclair's studies indicate that this effect is governed by a time-dependent localized strengthening through strain-aging and not by the ability of the metal to be strengthened by cold work. Coaxing appears to furnish a practical reason for gently "breaking in" new machinery when the components subjected to repeated stresses are formed of a metal capable of being strengthened by strain-aging.

• **Concrete discussed**—Several papers were presented on the durability of concrete. C. A. Vollick and E. I. Skillman, material engineers, Bureau of Reclamation, Denver, Colo., for example, offered the following conclusions based on a study of aggregates:

• Freezing and thawing durability of air-entrained concrete can be correlated with the soundness of coarse aggregate as measured by the sodium-sulfate test.

• In general, durable concrete can be obtained with aggregates that show as much as 32% loss in this test with concretes containing 4% entrained air and with a water-cement ratio of 0.51.

• The compressive strength of air-entrained concrete having equal water-cement ratios is influenced by the cement content of the concrete and the soundness of the coarse aggregate as measured by the sodium-sulfate soundness test.

Herbert K. Cook, Chief, Concrete Research Division, Waterways Experiment Station, Corps of Engineers, Jackson, Miss., reported the results of exposing 2,500 concrete test specimens to natural weathering in Maine and Florida. Rise and fall of tides alternately immersed the specimens in sea water and exposed them to air.

At the Florida station, well-made concrete was not seriously affected by exposure unless the portland cement contained well in excess of the maximum calculated tricalcium aluminate content permitted by specifications for Type II cement.

At the Maine station, where severe freezing and thawing occurs, well-made concrete could not withstand exposure for more than one winter unless the concrete contained proper amounts of entrained air. Observers also found that exposure at the Maine station was not materially less severe than the laboratory procedure for testing specimens by rapid freezing and thawing in water.

• **Masonry troubles**—J. W. McBurney, technologist, National Bureau of Standards, Washington, D. C., traced cracking in masonry to free magnesium oxide causing expansion of hardened mortar. He also presented evidence that many of the observed openings between bricks and mortar-joints are caused by certain techniques of masons. He recommended that masonry cements and cement-lime mixtures for use in mortar be required to pass an autoclave test for soundness with a permitted gain in length of not more than 1.0%.

F. O. Anderegg, consulting specialist on building materials research, Somerville, N. J., investigated another source of masonry trouble—efflorescence. This may be caused by lime dissolved as hydroxide and brought to the surface when new masonry becomes saturated. Or it might be formed by the action of sulfates on the hydrated calcium aluminate in hydrated portland cement; the double salt so formed occupies far greater space than the original aluminate, also can undergo crystal growth. Most masonry disintegration is caused by such crystal pressure.

Mr. Anderegg recommends that designers should use details that reduce penetration of rain and ground moisture to a minimum. They should provide an escape mechanism, such as a continuous cavity within the walls with weep holes suitably placed to get all moisture out as quickly as possible by drainage and ventilation.

Architects need engineering, AIA hears

Closer cooperation between architects, engineers and other segments of the building industry was urged at session after session of the 84th convention of the American Institute of Architects held during the period June 23-27 in New York City's Waldorf-Astoria Hotel.

The call was sounded by the technical theme, "Structural Resources for Architectural Design"; at the Lever House exhibit "Re-union of Architecture and Engineering, 1852-1952"; at the three technical seminars, and at the building industry luncheon which was sponsored by AIA and the New York Building Congress.

It was implemented in the talks given by such leading engineers as Carlton Proctor, president of ASCE; John P. Riley, New York City Coordinator of School Construction; C. S. Whitney of Ammann & Whitney; Roger Corbetta, president of Corbetta Construction Co.; M. J. Holley, MIT's prestressed concrete expert; O'Neil Ford, lift-slab authority from the Southwest Research Institute, and Fred Severud, structural engineer.

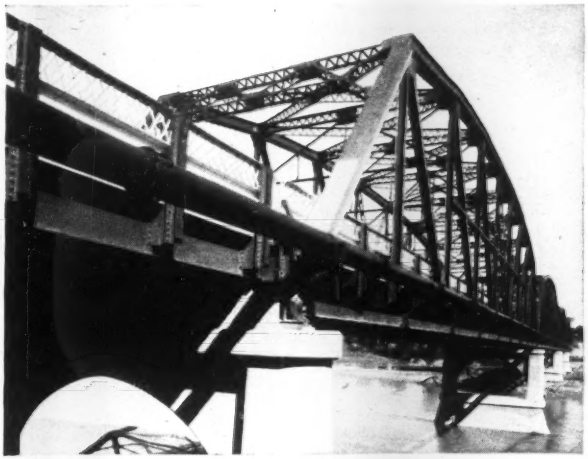
Corridor gossip indicated the admonitions weren't falling on deaf ears. Indeed, many an architect was heard exclaiming something like: "It's about time. No architect is worth his T-square unless he has a sound grasp of structural engineering."

• **Largest convention**—Nearly 2,000 persons registered at the convention, making it the largest ever for the 95-year-old organization. The delegates did a minimum of listening, a maximum of looking. Only eleven major addresses were given, contrasted with 85 papers presented at last year's gathering. The architects could do their seeing on fifteen separate tours and visits during the week.

Glenn Stanton, Portland, Ore., architect, was re-elected president. Other officers who will serve a second term are: Kenneth Wischmeyer, St. Louis, and Norman Schlossman, Chicago, vice-presidents; and Maurice Sullivan, Houston, treasurer. Four new regional directors are Richard Creer, C. Storrs Barrows, Edgar Berners and W. Gordon Jamieson. In the only contest, Clair W. Ditchy, Detroit, was re-elected secretary.

Three important resolutions were

Got EXPANSION-CONTRACTION problems in the pipeline you're designing?



A 16" Dresser-Coupled water line across the Colorado River at Grand Junction, Colorado. Dresser-Coupled to assure Flexible-Tightness despite longitudinal stresses and traffic vibrations that would open a rigid line. Easily installed Dressers have given dependable service here since 1933.

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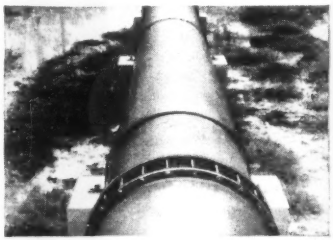
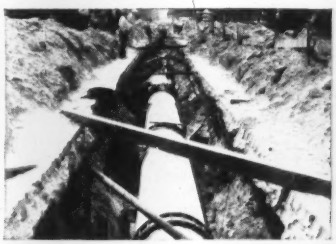
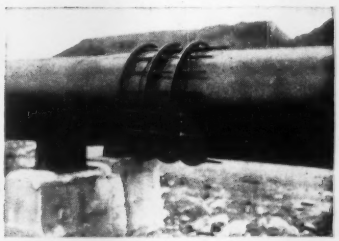


A section of Savannah's new 42" Dresser-Coupled water line crossing swampy ground on concrete pile bents. Flexibility of couplings protects line against stresses.



Another Dresser-Coupled installation in Chicago, Ill. Dressers harmlessly absorb underground stresses beneath city streets where joint failures would be extremely costly.



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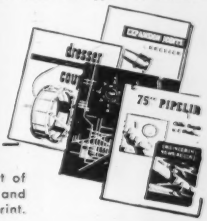

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PRESIDENTS of ASCE and AIA urged closer ties between the two professions at latter's convention last week. Carlton Proctor and Glenn Stanton spoke before a large gathering at Lever House exhibit commemorating the centennial of engineering.

given approval by the convention.

One called for decentralization of cities and industries and a radical replanning of existing cities to relieve congestion. It suggested that slums are the areas most in need of clearance.

A second took exception to personnel of the U. S. Public Building Service performing detailed design, branding such activity an encroachment into private architectural practice. A $100,000 public relations program, over the next three years, was authorized to combat both government and building contractor encroachments.

A third resolution advocated legislation to permit an architect registered in one state to execute a single project in any other state.

• **Commemorate centennial**—More than 700 delegates walked the short distance from the Waldorf-Astoria Hotel to Lever House to watch President Stanton present an honorary membership in AIA to Mr. Riley.

Then they studied the "re-union" exhibit, built to commemorate the centennial of engineering this year.

On display in the lobby, the exhibit consists of photographs of outstanding projects illustrating six phases of architectural and engineering progress: cast iron, the elevator, the steel frame, reinforced concrete, glass, and standardization of building methods. Accompanying text was written by Lewis Mumford, well-known architectural critic. Dean Leopold Arnaud of Columbia University's School of Architecture gathered the material.

• **Technical sessions**—At the first technical seminar, C. S. Whitney enumerated the advantages of thin-shell construction, while Mr. Corbetta urged architects to design in precast concrete to reduce costs.

The second session, on structural design, heard Mr. Ford give an enthusiastic account of the first lift-slab job at Trinity University (in San Antonio, Texas) and tell of later jobs done in this manner. He cited a recent warehouse built for about $4.50 psf. Slabs of 1,500 sq ft were pulled up by 36 jacks on this warehouse. Ford also showed the architects how openings could be designed into slabs intended to be lifted.

The second speaker, Prof. J. M. Holley reviewed the theoretical advantages of prestressed concrete for architects. He urged consideration of this material when loads are extremely heavy, spans unusually long, and when minimum depths are required.

At the last technical seminar, on reducing costs of construction, W. H. Scheick, executive director of the Building Research Advisory Board, pointed out the significance of his agency's report on conservation (ENR June 26, p. 23). Henry L. Wright of Kistner, Wright & Wright, Los Angeles architects, spoke on conservation in schools. To be conserved are: critical materials, space, time and energy of teaching staff, and the health and vigor of the students. Conservation in hospitals was discussed by Robert W. Cutler, of the firm of Skidmore, Owings & Merrill of New York City.

• **Said the speakers**—The predictions of four top executives in the automobile industry were given in the opening luncheon address by Pyke Johnson, president of the Automotive Safety Foundation.

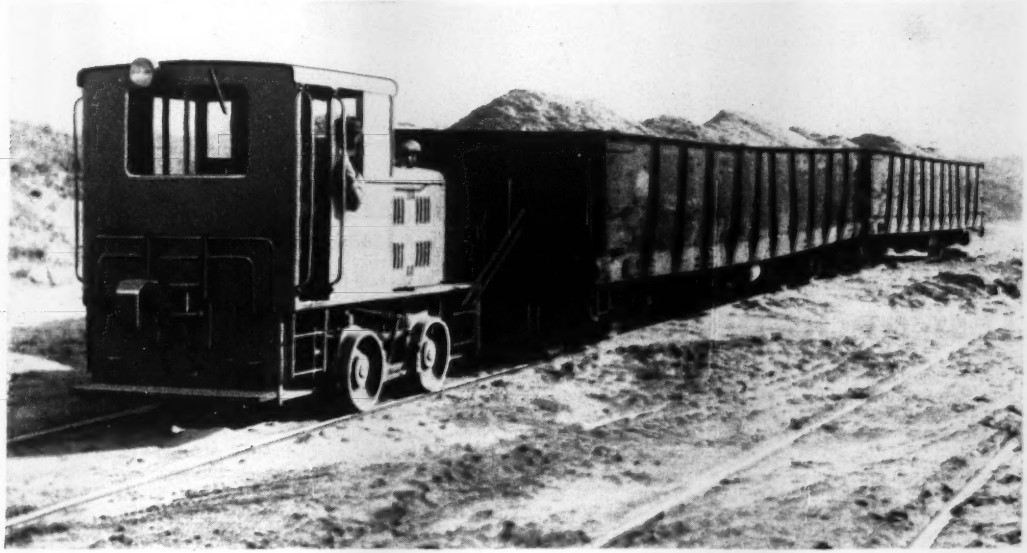
They were: Dimensions of automobiles definitely will not increase for at least a decade. Heads of Ford, Chrysler, Studebaker and Nash vouched for that statement.

At the building industry luncheon, Ernest T. Weir, chairman of National Steel Corp., blamed government intervention for the current steel strike.

Dean W. Malott, president of Cornell University, was principal speaker at the annual dinner. His well-documented analysis of America's present domestic and foreign policies scored governmental bureaucracy.

In addition to Mr. Riley, honorary membership in AIA was conferred upon Robert Moses. Auguste Perret of France won the Institute's Gold Medal, its highest honor. William S. Parker received the Edward C. Kemper Award for services to AIA. Lever House was chosen one of the three best buildings of the year.

10 Years before overhaul, routine check-ups only



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NEWARK AIRPORT OVAL was built on new runway location. Banked-up sand is surcharge for sand-drain consolidation of underlying muck throughout the area to be occupied by the new runway.

Test tracks promise burst of new know-how

THE TEST TRACK, a historic device for highway research, is having a big year.

At Newark, N. J. airport, pavement design for new runways has just been established with the aid of an on-site test track.

In Idaho, construction began in May on a pair of tracks that are expected to provide valuable information on the relation of the thickness of flexible-type pavements to truck loadings.

And in Iowa plans are complete for a versatile test track on which driverless vehicles will operate. Financing is yet to be arranged. The benefit there is cheaper and more precise test-track operation.

Full-scale road tests have been made at various places ever since the automobile made America road-conscious. Usually these tests have been conducted on specially-built roads or closed tracks. The first was the so-called "Object-lesson" road, built in 1897 at New Brunswick, N. J. by the U.S. Office of Road Inquiry (forerunner of the Bureau of Public Roads.)

More than a score of years later, in 1920, the Bates Test Road was built by the Illinois Highway Department. Another significant test road, built at Pittsburg, Calif., became the source of much lore on plain and reinforced concrete pavements. Other tracks, some of them small for loading by single wheels, and some of them large for full-size vehicle operation, have been in operation for several years. One of the larger ones, the U.S. Bureau's Public Roads track in Washington, D. C., no longer is in use.

Recently attention has been focused on test roads by a full-scale program near La Plata, Md. (ENR May 22, p. 80). There, in 1950, the BPR and other sponsors investigated the effects of various truck axle-loadings on a stretch of concrete-paved highway that was taken out of service for the purpose.

Newark track helps runway design

In a way, the Newark Airport test track reversed the La Plata technique. The oval track was built where a new runway was to be laid. Tested to partial destruction, the track was torn out before runway paving began.

The marshy area had been sand-drained and surcharged with hydraulic sandfill. After the required consolidation of marsh muck had been reached, the surcharge was removed down to subgrade elevation along the line of the track. Surcharge inside the track oval was left in place to gain some additional consolidation there.

Principal object of test track construction and operation was to find the cheapest runway design that would stand up under big-plane loads. A secondary objective was to establish test data that would benefit other Port Authority runway and road design projects.

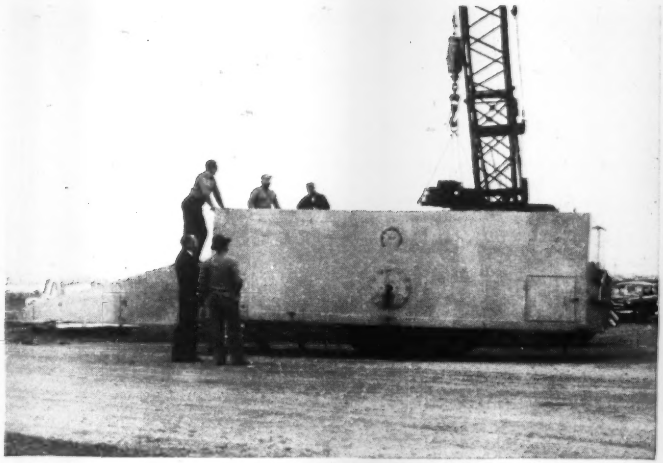
Ten different designs were built into the test track. In general they consisted of a base course (stone screenings), one or two courses of penetrated stone, and binder and top courses of asphaltic concrete. The weakest course, however, consisted of 7 in. of screenings topped by only a 2 in. top course of asphalt.

The strongest course included 5 in. of screenings, two 3-in. layers of penetration, a 2-in. asphaltic binder course, and a 1½-in. top course.

• **Newark design**—Chosen for the actual runway pavement was a design calling for 6 in. of screenings, 5 in. of penetration, 2 in. of binder and a 1½-in. top. It was found that 6 in. was a practical minimum thickness for the screenings, and that the single-course penetration was as good as a double—and cheaper to place.

In some test sections the top course tended to separate from the binder, probably due to a fine sandy deposit on the binder surface (sand drifting almost constantly plagues the Newark airport builders). A tack coat on top of the binder is expected to overcome this difficulty.

Lengths of the ten test sections varied from 45 ft to 185 ft, along a track centerline distance of 970 ft. Track width was 30 ft, with out-to-out oval dimensions of 200 ft (the overall runway width) and 420 ft.



SUPERCOMPACTOR applied big-plane wheel loads to Newark test track. To get a full 100-ton load on the two outside wheels to approximate plane loading, the suspension system was modified to take all load off the inner wheels.

BIG CRACK opened in a weak test section at Newark, revealing windblown sand between asphalt courses.

Tests took place on the interior 20 ft of the track width.

Construction procedures involved placing the screenings on the surface exposed by surcharge removal. Screenings were rolled to optimum density by a 10-ton 3-wheel roller, then they were given six passes by a supercompactor loaded to 160 tons. Penetration and asphaltic construction completed the work. A reason for using the supercompactor was that it revealed weak spots in the subgrade, and it compacted the top layer of sand under the screenings.

Before going ahead with tests, Port Authority engineers drove 2,100 nails into the surface, at 3 ft spacing transversely, 5 ft longitudinally. Position and elevation of the nail heads were observed periodically, with emphasis on bad spots as they developed during the test.

• **Supercompactor**—The test took 60 days. Load was applied by the supercompactor, which was rigged to place a full 100-ton load on two of its four wheels. With a tire pressure of 145 psi, this load approximated the wheel loading of the largest airplane now contemplated.

Here is the story on the supercompactor's adaptation. In normal use two box sections, each on two wheels, are linked beside each other. The pin linkage allows all four wheels to bear equally. Loads are adjusted by varying ballast in the boxes.

To get the load on the outer wheels of each box, Port Authority mechanics substituted rigid members for the pinned links at front and rear. These were welded to the two boxes while the boxes were tilted apart at their tops. With all air taken out of the inner tires, outer wheels took all the load.

• **Towing problem**—Because the supercompactor was to test a paved surface, it was necessary to pull it with a rubber-tired vehicle rather than a crawler tractor. (Lugs would destroy the surface, and therefore the test.) The vehicle chosen was a "prime mover," a three-axle truck with power to the rear axles. This placed traction on 8 tires.

The test proceeded around the clock straight through the 60 days. Downtime for ordinary maintenance averaged four hours daily. Two or three men took turns driving during each 8-hour shift. In all, 2,067 "coverages" were made. A coverage was five laps, which put wheel coverage on the full 20-ft test width. Drivers followed stripes painted on the pavement.

After the 2,067 coverages were complete, 1,856 laps were driven along the centerline, to accelerate destruction in one pair of wheel tracks. The number of laps was counted with a regular rubber-hose type traffic counter.

• **Test progress**—Shortly after testing began, hairline cracks showed up in the weakest section. On the sixth day (this was in winter weather) construction joints began to open up in sections where a seal coat had not been applied. These openings were sealed. Where there was a seal coat, the seal went into the joints.

The first section to develop bad rutting had a 2-in. top course directly over 3 in. of penetrated stone. However, this rutting took place 3 ft from the edge, where lateral restraint of the subgrade probably was insufficient.

• **Human-failure problem**—The fact that this rutting took place outside the intended test zone highlights a problem of test-track operation: In the monotony of the work, drivers tend to wander from the courses set for them. (The Iowa test-track plan is expected to overcome this difficulty.)

Eventually rutting occurred in five test sections—always in the outside 3 or 4 ft.

Transverse cracking began to show up in two sections in 6 and 7 days. On the 40th day the top course in another section suddenly slipped, cracking wide open above a transverse sewer pipe. The binder course did not fail. The slippage was along the plane between the two courses. A film of sand, probably blown on during construction, appeared in that plane. Transverse cracks crept with the direction of traffic, which was reversed after every 500 coverages.

Three sections showed up best:

1. 4-in. screenings; two 3-in. layers of penetration; 2 in. binder; 1½-in. top.
2. 6 in. screenings; two 3-in. layers of penetration; 2 in. binder; 1½-in. top.
3. 6 in. screenings; 4 in. penetration; 2 in. binder; 1½ in. top.

The design chosen comes nearest to the third one, except that the penetrated layer is 5 in. thick. Stone in this layer is 1½ in.

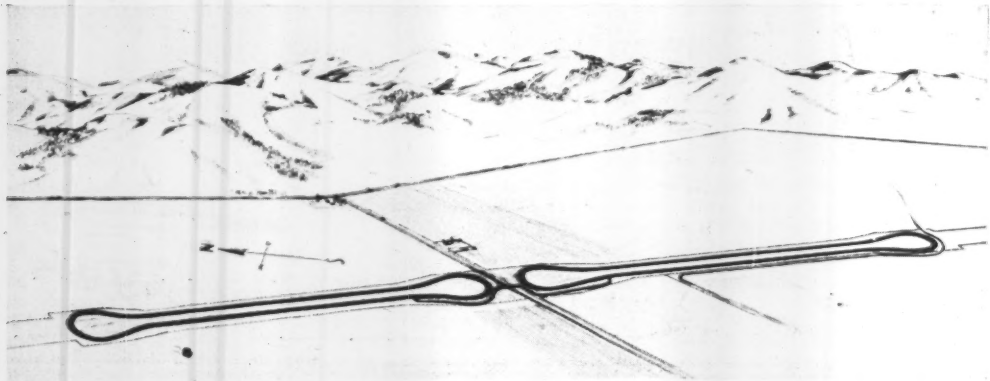
This choice was influenced by the

fact that the runway pavement contract already had committed the owners to the binder and top-course thickness. A practical minimum of 6 in. for screenings was imposed by construction conditions (supercompactor would churn up a thinner layer). So the opportunity for varying the design lay primarily in the thickness of the penetrated layer.

In appraising test results, Port Authority engineers took into account that the work was done in cold weather, which, unless cracking is bad, is not the severest test of asphaltic roadways.

Appraisals of the results, particularly horizontal and vertical displacements of surface points, will continue for several months. Among other analyses they will be correlated with the results of plate-bearing tests, which were made before supercompactor runs began.

The test pavement was constructed by Standard Bitulithic Co. of Newark, on a cost-plus-fixed-fee basis. Costs ran about $62,000. In charge of track construction for Port of New York Authority was Frank Carey. Accelerated traffic tests were made under the direction of E. P. Pitman, materials engineer, with M. S. Kapp, in charge of soil analyses. John M. Kyle is chief engineer of the Port of New York Authority.



TWIN TRACKS—Of duplicate design, these tracks in Idaho will have varying cross-sections in the straightaways. One track will carry standard truck axle loadings; the other, 25% overload.

Work begins on WASHO test track

About the time the Newark test track was being torn up, grading began for a test of flexible-type pavements in south-central Idaho, near Malad, a project inaugurated by the Western Association of State Highway Officials.

Sponsors are to be the state highway departments of California, Colorado, Idaho, New Mexico, Nevada, Oregon, Texas, Utah, Washington, and Wyoming, which have contributed a total of $285,000. In addition, the Bureau of Public Roads is furnishing certain equipment, material and personnel with an estimated value of $70,000.

Truck and truck trailer manufacturers, the petroleum industry, and others have definitely promised or are making arrangements to contribute equipment and supplies valued at nearly $150,000. Administration, construction of the road, planning and conduct of the test, and analyses of the results have been assigned to the Highway Research Board, Washington, D. C.

• **Test road details**—Plans and specifications for construction of the test sections were prepared by the Idaho Department of Highways, in accordance with directives of the Standards Committee of WASHO. Competitive bids were taken by the Highway Research Board and the contract for construction was awarded to the Carl E. Nelson Company of Logan, Utah, for approximately $200,000.

Two loops will be built, each with 1,900-ft tangents, 100 ft apart and connected at the ends with 150-ft radius turnarounds. The two loops will be identical in design; each tangent of each loop will contain five different pavement thicknesses. The thicknesses of these sections are 6, 10, 14, 18, and 22 in., established in order to evaluate past, present and possible future design practice.

The only difference between the tangents of each loop is that in one case the five sections will include a 4-in. dense-graded bituminous hot-mix surfacing and on the other tangent the surfacing will be 2 in. thick.

The native soil in the area is a highly uniform silty loam (HRB Class A-4). Granular material for subbase, base, and surfacing is available in a nearby borrow area.

The test sections should be ready in September, when pretest traffic, made up of empty trucks, will be operated for about two weeks in a uniform pattern over each test section to condition the surface. Early in the fall, eight tractor-semitrailer combinations will be loaded with concrete blocks and test traffic started.

• **How trucks will operate**—The trucks will operate in pairs, four vehicles on each test loop, two in the outside lane and two in the inside lane. On one loop, single-axle combinations will be used, with 18,000-lb axle loads running on the inside lane and 22,400-lb axle loads on the outside lane. On the other loop, tandem-axle combinations will be used with 32,000-lb tandem-axle loads on the inside lane and 40,000-lb tandem-axle loads on the outside.

One round trip will be 6,600 ft (1¼ miles) and the turn-arounds have been designed with superelevation to permit an average speed on the loop of 30 mph. The trip will take about 2½ min. Since there will be two combination vehicles in each lane, the pavement will be subjected to two heavy-truck loads every 2½ min.

The test traffic will be operated about 18 hours (15 hours net travel time) six days a week; so under ideal

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conditions each section will undergo about 720 truck-trailer applications per day, or 18,750 per month.

It is planned to continue the test traffic for a total of six months, part this fall, until winter weather makes it impractical to continue testing, and the balance in the spring of 1953.

Instruments will measure static and dynamic deflection of the surface, base and subgrade, as well as pressures. Provision also will be made to measure the moisture content of the subgrade.

• **May provide an answer**—Commenting on the program, E. V. Miller, Idaho State highway engineer, says the objective is to find an economic answer to the big truck vs. roads controversy.

"If, as the truckers assert, there is an economic advantage to be gained by loading that will result in heavier axle loads, that factor must be considered.

"If axle loads are increased to decrease truck operating costs, there will be an increase in the cost of roads to support heavier loads. The public, which in the long run must pay both trucking costs and cost of roads, should be assured that it will not be called upon to shoulder an increase of road costs greater than the reduction in operating costs.

"Information obtained on the test section as to damage caused by various loads, when correlated with truck operating cost studies, should provide at least a partial answer.

"Test section information will also provide valuable design data and may provide a firmer basis for establishing load limits on existing roads."

Iowa to try driverless trucks

Planned but not yet authorized for construction is an Iowa test track that is expected to be broader in scope than the other two. To be built as a permanent oval trough in which many kinds of road can be built, tested and dismantled, the Iowa track will be a highly versatile research tool.

The project's real significance, however, lies in its provision for automatic operation of test vehicles.

Driver error, stemming largely from monotony and fatigue, in the past has thrown extra variables into full-scale road testing. Examples of this were noted in the Newark account. Then there is the expense of paying the drivers.

Under the Iowa plan, trucks will be kept on the track by steering-gear outriggers contacting continuous guide rails. Devices clamped to the guide rail will trip control levers to provide for stops and speed changes.

Sponsor of the plan is the Iowa Highway Research Board at Ames. The project is to be handled by the Iowa Engineering Experiment Station, which assigned it to Prof. Ladis H. Csanyi, of the Civil Engineering Department, Iowa State College, Ames.

Purpose of the project is to accommodate accelerated testing of roads built by ordinary construction methods, with standard construction equipment. Tests will cover pavements, bases and subgrades.

• **How it will be built**—The track will be built at Ames. Overall dimensions of the oval will be 1,100 ft by 350 ft, with sharpest curvature in a 112-deg segment of 250-ft radius at each end. These curves will be connected by transitions to 300-ft tangents, making a total length of about a half mile. There will be an entrance road and a siding with two track connections.

Various cross-sections will accommodate different kinds of tests, but in general the track will be in the form of a rectangular concrete trough 12 ft wide inside. Tangent sections of the trough will be 24 in. deep, except for one 150-ft length 48 in. deep and a 50-ft length that will be built as a 10-ft deep tank, in which subgrade moisture and freezing tests can be conducted. There will be 12 in. of superelevation on the circular curves, for an average speed of 30 mph, or about 1,400 passes per truck per 24-hour day.

The 12-ft trough width will leave room for 10-ft roadway construction with regular roadbuilding equipment. Depths are sufficient to accommodate courses of subgrade soils.

Trough walls will support the vehicle-guide rails.

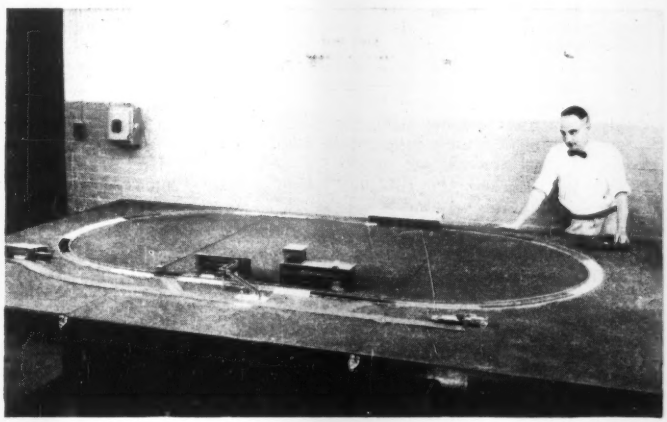
• **Test trucks**—Standard highway vehicles will be used on the track. Steering is to be accomplished by a pair of outriggers, each having telescoping arms, to permit adjustment of wheel-track position with respect to the guide rails. The rear outriggers are to be attached to the tractor and trailer frames. Springs in the telescoping cylinders will maintain pressure on the guide rails.

Automatic stop and speed-control designs also have been devised with the aid of manufacturers. Trucks will be started manually, by means of an outside clutch lever.

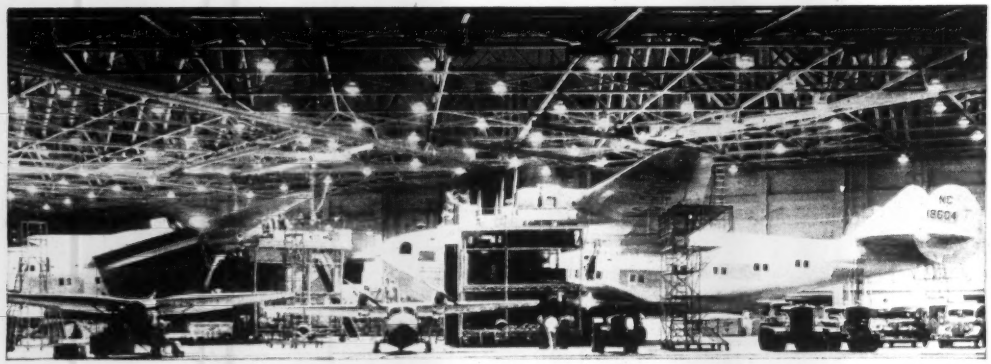
• **Instrumentation**—Part of the plan calls for a test instrument house. Initial instrumentation is to include three 24-channel recording oscillographs, to handle 72 load pressure cells. Provision also is made for load distribution and deflection mat equipment. Flow meters, pumps and controls have been included for control of subsurface moisture or drainage in the tank test area.

Later, radioactive isotope testing may be done, and a weather-test house may be built over part of the track.

Estimated cost of the test installation at Ames is $269,000, with a first-stage cost of $144,000. This latter cost would include engineering and land ($21,000) track construction ($78,000), on test vehicle and accessories ($42,000) and a trial operation ($3,000). The $75,000 instrument building would be in a second stage.



MODEL TRACK—Prof. Ladis Csanyi operates automatic test-track model he built for trying out ideas for Iowa test track.



1. IN HIGH BAYS—Closely spaced machines cut off light from each other, when illumination is supplied by diffusing-type units. The solution is to use fixtures that concentrate the light downward in narrow cones.

A fresh look at three lighting problems

- **Should you use diffuse or concentrated lighting in industrial high bays?**
- **What type of illumination is best for spectators and players in gymnasiums?**
- **Considering cost and comfort, what type of lighting is best for classrooms?**

H. L. Logan
Vice president for research
Holophane Co., Inc.
New York, N. Y.

SOMETIMES you can't see the forest because you are too close to the trees. The problems involved in designing lighting installations for high-bay sections of industrial plants, gymnasiums and classrooms demonstrate that fact very well.

I believe a fresh look at these problems, in the "light" of fundamental principles, will clear up some misconceptions and point the way to more satisfactory solutions.

1. High bays in industry

All that seems necessary to achieve efficient high-bay lighting is to spot sufficient outlets on the plans and specify large enough lamps and equipment. Belief in the simple nature of the problem is confirmed, when, after the building is finished, the light meter reading in the empty interior checks prediction.

The shock comes when, after the plant goes into operation, the owner complains he has only 10 ft-c when the prediction was 50 ft-c!

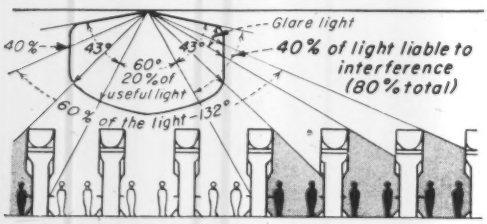
What has happened is that a great empty space has been changed into a plant full of machines and materials—full of obstacles to light.

In an empty interior, light from 100 sources can reach almost any given point. But when the machines are installed, this point may be reached by light from only 20 fixtures.

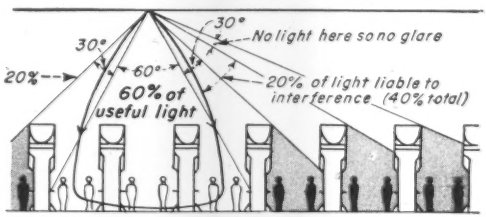
It is apparent, then, that diffusing-type lighting units, effective in an empty room, can be quite inefficient in occupied high-bay areas (where the machinery and products are usually of large dimensions). The ideal unit for such applications must compress its light into a feather edged cone so that some 60% of its light reaches the work below it—instead of the 20% characteristic of uncontrolled diffusing-type equipment.

• Narrow distribution better—The advantages of the narrower distribution are shown clearly in Fig. 4 and 5. These prove erroneous the widespread impression that the massed effect of many diffusing lighting units will compensate for individual weakness. This misconception was abetted by the assumption that diffusing units provide better illumination on vertical surfaces. This, too, fails upon examination.

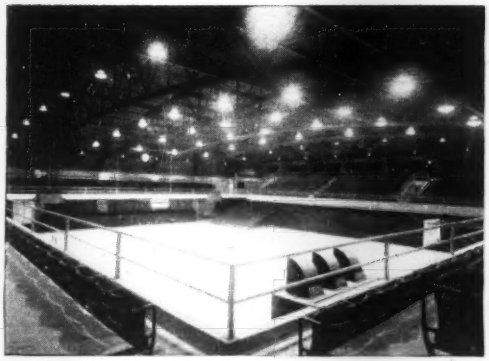
A ray of light falling straight down obviously does not light vertical surfaces. But it does as soon as it slants a little. As the slant increases, the light on vertical surfaces increases, but



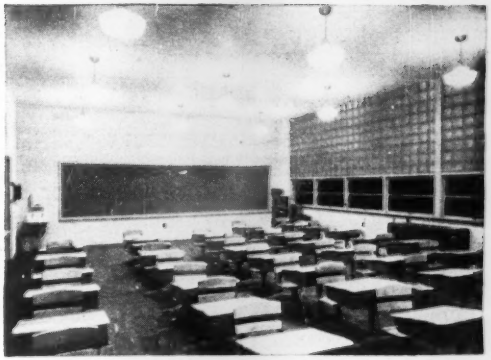
4. WITH DIFFUSING DISTRIBUTIONS only 20% of the light in high bays can be used.



5. INTENSIVE DISTRIBUTIONS, however, put 60% of the light to work, even where machinery is very tall.



2. IN GYMNASIUMS—Diffusing-type units would annoy the spectators. High-bay fixtures that throw light downward in narrow intensive fashion are better.



3. IN CLASSROOMS—Controlled direct lighting is best from engineering and cost standpoints. Hanging incandescent units (shown above) commonly are used.

only up to 35 deg from the vertical! That is, vertical surfaces are best lighted when the ray that strikes them is 35 deg from the vertical. When the ray slopes still more, say 45 deg, the amount of vertical illumination drops. At 60 deg it is only a little more than half of what it is at 35 deg, owing to the shrinking effect of increasing distance (Fig. 6).

On the other hand, units that yield the highest horizontal illumination light vertical surfaces to a higher intensity, too. The bulk of light from such concentrated units is delivered between 0 and 45 deg from vertical.

Fig. 1 shows a typical high-bay industrial interior that requires light to be "punched" down in narrowish intensive fashion to achieve maximum effect. Incandescent prismatic high-bay reflectors do the job admirably.

2. Gymnasium lighting

Contrasted with fully occupied spaces of industrial high-bay areas, gymnasiums are mainly large empty rooms. Yet narrow intensive lighting distributions are still necessary, instead of the diffusing distributions that seem to be called for.

If diffusing equipment is used in a gym, the galleries become as bright as the playing floor. The audience finds seeing difficult.

In contrast, intensive high-bay equipment permits a concentration of light on the playing floor. An occupant of the gallery can look with comfort toward the much more brightly lighted action on the floor (Fig. 2).

The brightness contrasts with high-bay equipment are similar to audience conditions in a theatre. You can look with easy concentration from the obscurity of your seat to the brightly lighted stage.

Diffusing-type light sources that are located remotely from the spectator emit rays that tend to strike his eyes, even when he is looking at the playing floor. This does not happen with narrow-distribution equipment, because very little light is emitted at these shallow angles (0 to 45 deg from the horizontal).

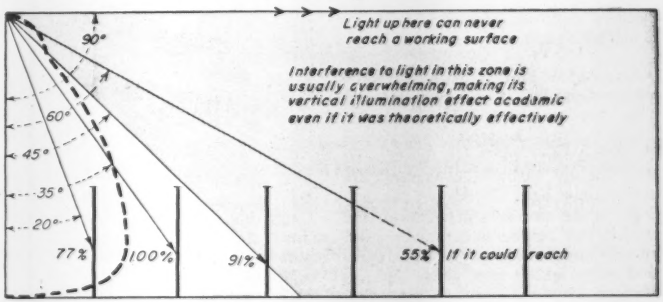
This point is of even more importance to the players. Spectators' lines of sight are inclined downwardly towards the action. But players look downward, horizontally and upward. The more controlled and narrow the distribution, the less the brightness of distant units as players' sight lines sweep near them. Consequently, they can see the action faster and clearer.

The high lumen output of fluorescent lamps is no advantage in interiors of this sort. The unavoidably high mounting height, coupled with the diffuse nature of the light, results in no more illumination on the playing floor than can be secured from the same wattage employed in incandescent lamps with efficient high-bay reflectors. Further, the excess light in the upper part of the interior with diffusing sources, results in additional glare that decreases effectiveness of the light that does reach the playing floor. On top of this, sources and equipment of this type present a maintenance problem in gymnasium interiors.

3. Classroom lighting

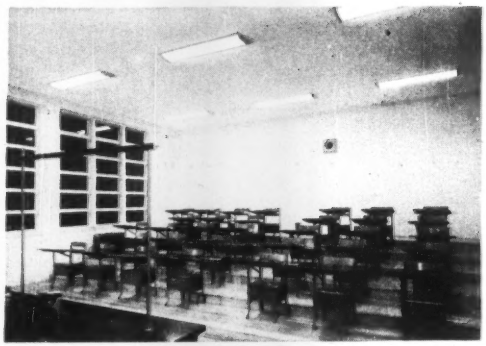
On the basis of strictly engineering and economic considerations, there is only one way to light classrooms: By controlled direct lighting, either incandescent or fluorescent. The fact that so many other ways are used is a reflection of the efforts of the many different organizations that are servicing this field competitively, and also of the emphasis placed on non-engineering and non-economic factors.

Some people, for exampe, prefer the appearance of an indirectly lighted classroom, or a luminous ceiling job. Others firmly believe that their conception of visual comfort can be satisfied only by indirect lighting. Still others feel high lighting levels, coupled with very light room finishes and



6. ILLUMINATION on vertical surfaces varies in intensity with the angle of incidence, reaching a maximum at an angle of 35 deg with the vertical.

7. RECESSED INCANDESCENT FIXTURES with control lenses are more expensive than suspended units (Fig. 3) but may give better classroom lighting.



8. BUILT-IN FLUORESCENT FIXTURES with curved lenses cost more than the types in Fig. 3 and 7 but furnish superior illumination.

very low contrasts, are essential to the reduction of students' eye troubles, and even to their maintaining high scholarship.

Obviously it is impossible to treat these different viewpoints with justice in an article of this length, so the discussion here will be confined to direct lighting.

Fig. 3 shows the most generally accepted way to light a classroom with hanging incandescent direct units. Twelve 200-w units are equally spaced. They deliver 30 ft-c on the desks. Initial expense and maintenance costs are low.

A more architecturally pleasing method that is in wide use is shown in Fig. 7. Here twelve 200-w incandescent lens units are built flush into the ceiling. They deliver 25 ft-c on the desks.

Maintenance is still low with this type of equipment, but the initial expense is greater than for the hanging units. In the particular installation shown, the ceiling is sloped to permit clerestory windows in the wall opposite the main window wall, so that natural lighting can come from both sides of the room in the daytime. With this type of room construction, built-in equipment seems the most practical answer.

• **Curved-lens units**—The lecture room pictured in Fig. 8 is equipped with nine 4-ft long 40-w fluorescent units of the built-in lens type. They deliver 25 ft-c. The lenses, being curved, project slightly below the ceiling and throw some light directly on the ceiling. In the previous installation, the well lighted ceiling is entirely a result of reflection back from the floor, desks and walls, which were given high reflection factors, to salvage light that otherwise would be absorbed by dark finishes. In this installation, the brightness of the ceiling is a combination of reflected light from the room interior and direct light from the units.

Original cost and maintenance of curved lens units are higher than for those previously described. But since the direct and reflected brightness of the equipment is substantially lower, many people will pay the higher premium.

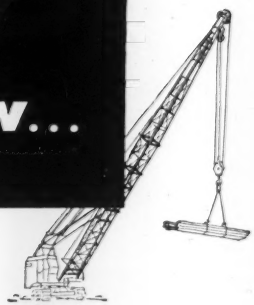
To achieve low brightness and still maintain high efficiency requires well-designed lighting units. The main idea is to have a source that emits very weak rays between the angles of 60 to 90 deg from the vertical. Any light between these angles is normally directed toward the eyes of persons remotely located from the particular source. These rays cause glare and don't contribute much useful light.

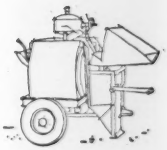
If, instead, this light is redirected at a steeper angle downward, uncomfortable glare light is converted into seeing light. This is what is meant by high efficiency: potential glare rays are utilized instead of simply eliminated.

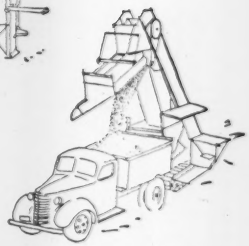
Army Engineers to rebuild ancient dam

A section of an ancient wooden dam on the Muskingum River at Zanesville, Ohio, gave way April 22. Until this mishap, Zanesville residents had nearly forgotten the old landmark, first built when the state of Ohio built a system of dams and locks on the river in 1841. After the break, the pool dropped until sewers are above the level of the stream. It was declared "out of bounds" for fishermen and boatmen. Although U. S. Engineers abandoned Muskingum River dams and locks June 30, the Senate Appropriations Committee has given its approval to the allocation of $500,000 for the building of a new dam at this site.

do you know...







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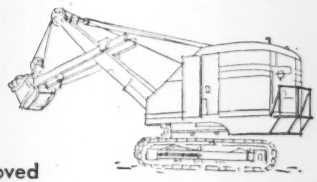

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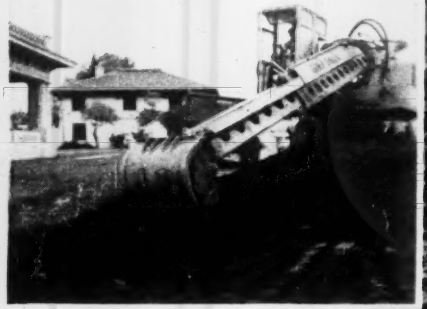

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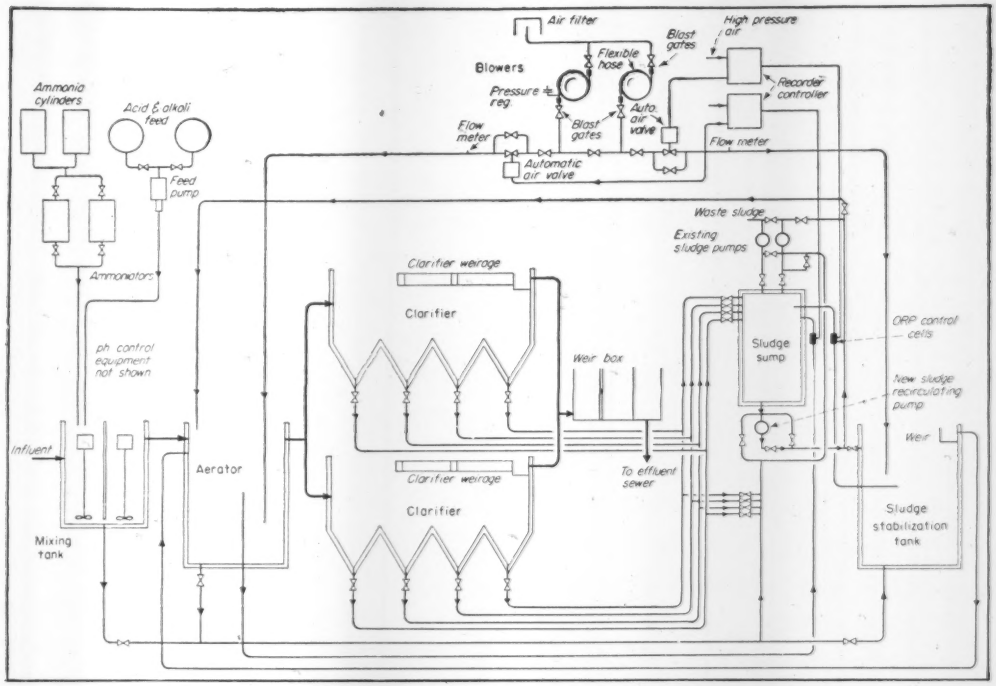


Full-scale experiment on an industrial waste will be made this summer as . . .

Activated sludge process gets new twist

BIOSORPTION—new sewage treatment process applied so far only at the Austin, Tex., plant—is about to go to work on industrial wastes in what is termed a "full-scale experiment." Only thing experimental about it is that Pennsylvania's Sanitary Water Board will withhold full approval until the plant has worked successfully on H. J. Heinz cannery wastes through one season. Pilot plant operations have indicated that it will.

Using biosorption on fruit-canning wastes at Chambersburg, Pa., will permit the Heinz company to modify and take advantage of existing concrete settling basins. Cost of the modification will be but $75,000—as opposed to $400,000 previously estimated as cost of structures and equipment needed for other biological treatment that had been considered.

• **What biosorption is**—Biosorption is a high-rate biological treatment process in three steps: (1) Raw sewage is mixed briefly with activated sludge, the latter absorbing and adsorbing a high percentage of it. (2) Mixed liquor goes to a settling tank, from which effluent is the plant effluent—low in BOD, and suspended solids. (3) Settled sludge including the pollutants goes to an aeration compartment for aerobic digestion, reactivation prior to recirculation.

• **How it developed**—Two groups, located over 1,300 miles apart, set to work about 2½ years ago on what is now biosorption. They started work almost simultaneously, and each group apparently worked with no knowledge that the other existed.

In Austin, Tex., it was A. H. Ullrich and M. W. Smith, respectively superintendent and assistant superintendent at the city's sewage works. Their counterparts in Ridgewood, N. J., were John Hood and Wesley Eckenfelder.

It was Ullrich and Smith who first gave the process its name—biosorption. Its basic difference from activated sludge is stated by A. A. Kalinske, director of development for Infilco, as this: The two steps of absorption and oxidation of organic matter are separated in the biosorption process.

• **Success on sewage**—The 525,000 people of Austin, Tex., have had 8½ mgd of their sewage treated by biosorption in a revamped plant for over a year now.

BOD's from 200 to 250 ppm are being knocked down to 10 to 25 ppm with ¾ to 1 cu ft of air being used per gallon of sewage. Retention times have been ½ hr in mixing, 2½ hr in settling and 2½ hr in aeration.

Advantages claimed are a small-size aeration tank and the need for no presettling. The process works on raw sewage. Excess sludge is in about the same proportionate volume as for conventional activated sludges. But there is the advantage that this excess can be drawn off at two points—either aerated or unaerated depending upon choice of disposal method. The entire process is claimed less vulnerable than others to effect from shock loads.

• **Now industrial wastes**—H. J. Heinz is under State order to correct its

serious seasonal pollution of Conococheague Creek in Chambersburg. And a 20-gpm pilot plant operated during the 1951 canning season indicated biosorption will be effective. Its installation was decided upon for the full scale test.

Construction now nearing completion will modify the cannery's old waste facilities to take full industrial waste flow from the plant through the coming peach, tomato and apple canning seasons.

It is expected that the full-scale process will prove acceptable and have its "experimental" label removed. There are possibilities that some alterations will suggest themselves and be accomplished as operating experience gathers.

• **To vary operation**—Pilot plant tests on Ridgewood's domestic sewage and on Heinz's food wastes indicate a maximum 1:1 ratio of recycled sludge to raw sewage should do the job. This may need varying at times depending on strength of wastes.

The 1952 investigation coming up now will begin looking for economies in power and chemical consumption and the determination of maximum loading rates compatable with optimum process efficiency.

Automatic controls are expected to be the answer to the economics problem. And among things to be controlled are pH and nitrogen content for nutritional value.

• **The waste load**—Eckenfelder has analyzed tomato wastes to find BOD 900 ppm or less 90% of the time and reaching as high as 11,100 ppm in severe periods of shock loading that do occur.

Apple wastes with BOD's from 600 to 3,800 ppm are experienced; they have virtually no nitrogen content; and these wastes have the bottom pH value—as low as 3.6.

A caustic bath used in peeling peaches will cause peach wastes to reach pH values over 11.5.

The pH of wastes must be regulated to within a 6.5-8.5 range. Nitrogen content was boosted in pilot plant operations by (1) adding supernatent from city sewage works digesters, (2) adding ammonium nitrate and (3) adding ammonium sulphate. Ammonium sulphate of 16 to 20% nitrogen content proved best of the three additives. In plant scale operation anhydrous ammonia will be used for nitrogen control.

• **Expectations**—It is anticipated that detention time of 3 to 5 hours in the plant will result in over 85% reduction in BOD of the tomato wastes. Apple wastes will be reduced over 90% in a longer detention period if expectations are realized.

Flow will be by gravity through the existing structures as modified. It is anticipated that existing sludge lagoons at the plant will be sufficient to receive the volume of sludge to be produced. But some pre-treatment of sludge is expected to be necessary—to be worked out during the forthcoming season.

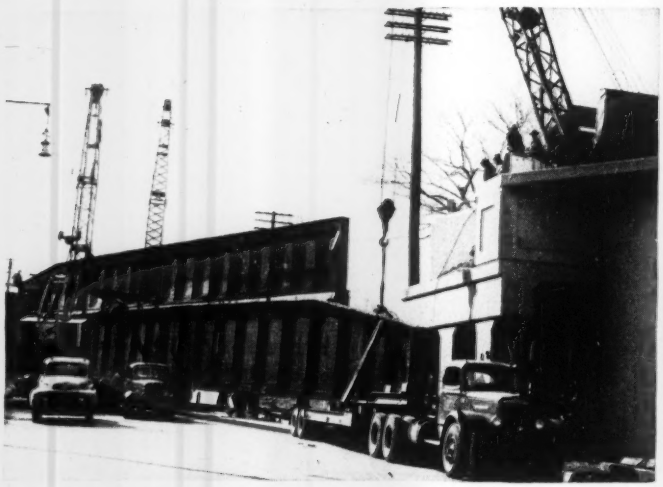
Facilities already at Chambersburg include a mixing chamber, a four-compartment sedimentation tank, chemical feed tanks and sludge pumps. These are to remain.

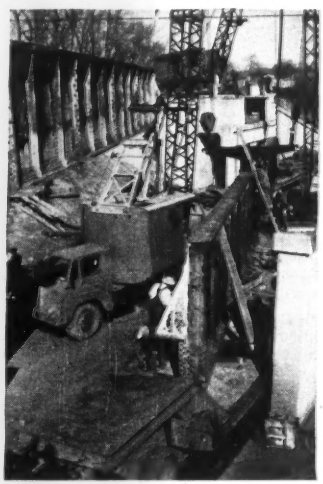
The mixing chamber will be used in the new process for pH adjustment and supplementing nitrogen. One of the four former settling compartments will be used for mixing (with air) the adjusted wastes and activated sludge. Two of the old settling compartments (with hopper bottoms) will be the new process's sedimentation units from which a clear effluent will overflow and mixed-liquor sludge will be drained.

The fourth concrete compartment is to be sludge stabilization (reactivation) chamber.

As far as possible the waste treatment plant is to be equipped on a trial basis by manufacturers who understand the experimental character of proposed 1952 operation. Modifications might well be in order on the basis of what is learned this summer and fall.

Flatbed trucks haul girder sections to new use





TWO FLATBED TRUCKS, one moving forward and the other in reverse, hauled sections of a 54-ton railroad girder from an abandoned viaduct in Springfield, Ill., to railroad cars a mile from the loading point. Three cranes were used by the Chism & Miller Construction Co. employees to lower the girders from the abandoned viaduct onto the trucks (left). To enable smooth negotiation of a turn at a city intersection, the truck (right) in left foreground moved in forward gear at the start of the trip and drove past the intersection. Then the rear truck shifted into forward gear and took over the lead. The girders will be refrabricated before being used on a viaduct under construction by the Illinois State Highway Division on U. S. Route 36.

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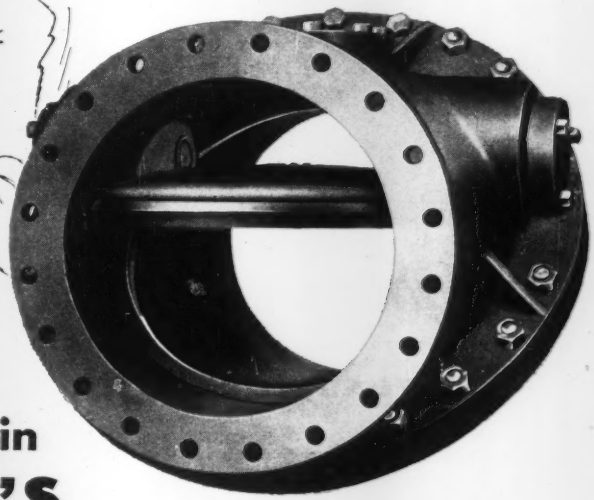

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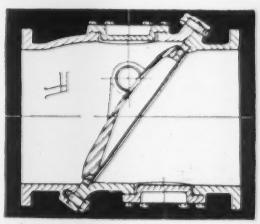

Cross-section of the Chapman Tilting-Disc Check Valve. A feature of the design is that the disc seat lifts away from the body seat when opening, and drops into contact when closing, with no sliding or wearing of the seats.

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$290 million in projects snarled in California

San Francisco Bay area plumbers struck for five days last month in a dispute over health and welfare provisions of their last year's contract.

With that cleared away, and the plumbers back on the job, the union started last week to negotiate on a 1952-53 contract, with its main aim a 29-cent-an-hour increase for plumbers and steamfitters. The men now receive $2.75 an hour.

Employers have now agreed to pay 7½ cents an hour into a welfare fund, retroactive to Apr. 4, when WSB approved such payments. The point at issue in the strike was the disposition of some $100,000 which the employers had paid into a health and welfare fund since last Aug. 1, to be held in escrow under terms of last year's contract. It was agreed that this problem will be decided by litigation now pending in a Sacramento, Calif., court.

Contractors are represented in the negotiations by the Master Plumbers Assn. and the Heating, Piping, Air Conditioning Contractors Assn. of Northern California.

Meanwhile, Northern California pile drivers continue their 2½-month-long strike, which is tying up some $50 million worth of construction.

Negotiations in this disagreement have stalled on travel allowances. Contractors have already met the pile drivers' demand for a 15-cent-an-hour increase and 7½-cent welfare plan.

Projects affected by this strike include some $20 million in highway construction, $7 million at Hunter's Point Naval Shipyards, $4 million at Alameda Naval Air Station, and $3 million at Contra Costa County Hospital.

• **Southern California**—The total of heavy construction projects shut down in Southern California was due to reach $250 million this week as the result of stymied negotiations between contractors groups and AFL Operating Engineers and Reinforcing Ironworkers.

The unions began scattered walkouts June 1, pulling their men off scattered jobs from San Diego to Kern County, without formal breakdown of negotiations or strike notification. The contractors—members of Associated General Contractors and Building Contractors Assn.—responded with a resolution to "make no work available" to any members of the two unions.

The engineers and ironworkers have not set up picket lines, and other AFL trades have continued to work as long as projects could be kept going.

The two unions have rejected the 19-cent-an-hour pattern established in settlements with other construction trades. Their latest demands were for a 28-cent increase plus travel time, subsistence, establishment of a health and welfare plan, and other fringe benefits. Contractors representatives said there was no purpose in further meetings until the unions came up with a "reasonable" proposal, and the outlook for prompt settlement was definitely on the gloomy side.

Local charter law fought by operating engineers

The AFL International Union of Operating Engineers has filed a suit in the Circuit Court at Louisville attacking the constitutionality of a new Kentucky state law which requires every labor organization having at least 100 members in Kentucky to charter a local in the state.

The law became effective June 19.

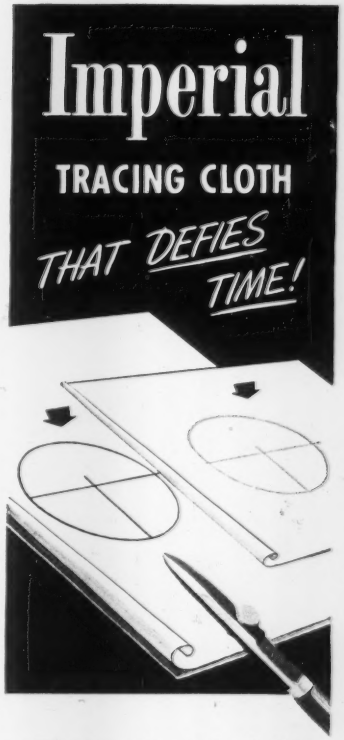
In their suit, the operating engineers ask for an injunction to prevent Commonwealth's Attorney A. Scott Hamilton and other Kentucky prosecutors from enforcing the new statute.

The union alleges in its suit that Hamilton warned a group of Louisville union members that they were violating the law in not having their own local and that he felt required to enforce the statute, which provides fines of $1,000 to $10,000 for each violation.

The new law was enacted after the 1952 Kentucky legislature approved a bill sponsored by Rep. Shelby McCallum, Democrat of Benton. McCallum said the bill was aimed at the IUOE. The union's Evansville local governs about 2,000 heavy-construction workers in 116 Kentucky counties. The Cincinnati local has members in only four Kentucky counties.

The IUOE suit claims that the union is not violating the law because it has subsidiary and local organizations in Kentucky.

(*Labor continued on page 51*)



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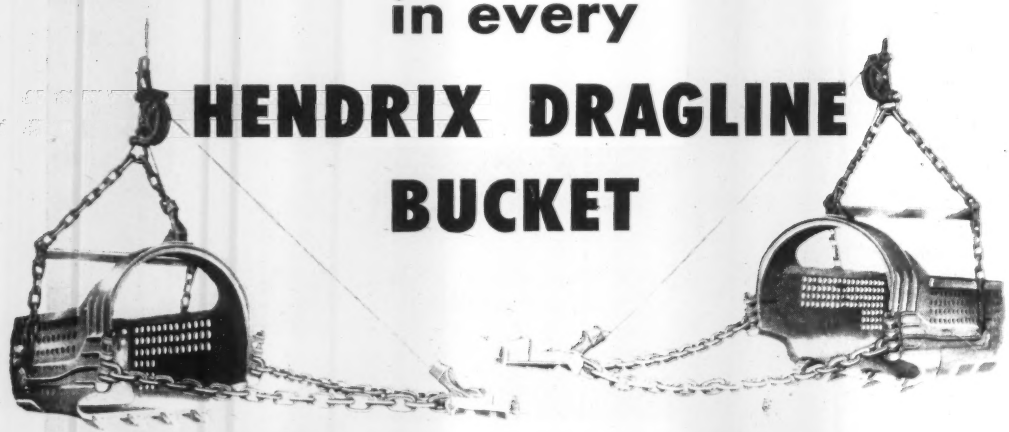

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Jurisdictional dispute plagues powder plant

Rehabilitation and new construction at the huge Indiana Ordnance Works at Charlestown was at a standstill last month as the series of jurisdictional disputes that have plagued the project for two months continued.

More than 4,000 building-trades workers are idle again, this time because of a jurisdictional squabble between Sheet Metal Workers Local 10 and two other unions—Pipefitters Local 605 and Boilermakers Local 40-C.

This is the sixth work stoppage at the $20-million project since the government began efforts last March to put the plant back into the production of smokeless powder.

E. I. duPont is the general contractor for the rehabilitation job and will operate the plant when it goes into production. Blaw-Knox Construction Co. of Louisville is duPont's chief subcontractor for the rehabilitation phase.

• **Latest shutdown**—The latest shutdown started June 16 when the sheet metal workers established a picket line, claiming that Blaw-Knox deprived their union of jobs and assigned them to the pipefitters and boilermakers.

Building-trades workers agreed to honor the picket line although they had previously signed a contract with Blaw-Knox outlawing jurisdictional disputes.

They have lost nearly $1 million in wages since the first walkout occurred May 2 and the plant's production schedule has been set back by more than a month.

The May 2 walkout followed a jurisdictional dispute between the three unions involved in the current controversy. Various subsequent stoppages have involved several unions and all have been the result of jurisdictional fights.

During the May 24-28 strike called by Truck Drivers Local 89, six men were injured in picket-line fighting. One man suffered a fractured skull in the flurry of flying fists, stones and clubs.

The violence occurred after the new Albany Building Trades Council composed of construction-trades unions, asked members of the unions to disregard the picket lines. The council canceled the request after the violence.

Perhaps as a result of this stormy series of labor-management disputes, Blaw-Knox replaced F. C. Gronemeyer, the company's field-manager, and R. J. Story, field superintendent.

(Labor continued on next page)

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State court right to enforce T-H under fire in Supreme Court test

Two key questions about the meaning of the Taft-Hartley law may be decided by the Supreme Court next fall:

• Can state courts enjoin unfair labor practices defined in Taft-Hartley? (Federal court can, of course.)

• If state courts can rule on such questions; can an employer take his case to them, instead of the National Labor Relations Board?

The court will review a ruling by the Supreme Court of Alabama that when "irreparable damages" will result from secondary picketing—an offense outlawed in Taft-Hartley—state courts may use their general injunctive powers to put a stop to such union activity.

The dispute arose last year when the AFL Building and Construction Trades Council set up a picket line on the site of a new apartment building in Montgomery, Ala. The general contractor, Bear Brothers, was not a union employer. But the Ledbetter Erection Co., which subcontracted the structural steel work on the building, was organized.

The union admittedly had no dispute with Ledbetter but was attempting to organize Bear Bros. employees. Ledbetter employees refused to cross the picket line for fear of being blackballed on other union jobs. Ledbetter then filed for injunction in a state court to end the picketing, claiming irreparable damage if it was allowed to continue. The company based its claim on the provisions of Taft-Hartley that made secondary strikes an unfair practice. Its argument for not going to NLRB was that damages available under the federal law were inadequate to compensate for their losses. The injunction was granted on that basis.

• **AFL argument**—In fighting the court action, the AFL argues that Taft-Hartley gives exclusive jurisdiction to NLRB.

The Alabama court emphasized the "extraordinary circumstances" of the case and said that there was considerable doubt that the labor board would have taken the case at all because of its slight effect on interstate commerce. The board has followed a rule-of-thumb policy by which it ordinarily doesn't take cases primarily local in nature.

Gist of the Alabama ruling is this: State courts can act in such cases, unless the federal law prohibits. The court said Taft-Hartley does not ban state courts from issuing an injunction if exceptional or irreparable damages are involved.

High court decisions on state-federal jurisdiction generally have held that where Congress has legislated in a particular field, that area is close to conflicting state action.

Compensation laws show liberal trend

Bills proposing changes in workmen's compensation laws were considered in most of the comparatively few state legislatures which convened in regular session this year, with enactments featured by further extension of the steady trend toward liberalization of such statutes.

States in which legislation providing for higher workmen's compensation benefits has been enacted thus far this year include Kentucky, Michigan and Virginia, with a similar proposal pending in Louisiana. This continues the trend which saw such measures enacted in 32 states last year, when many more state law-making bodies were in session.

Proposals for the establishment of monopolistic state workmen's compensation funds were rejected this year in Massachusetts, New Jersey and New York. Rejection of these bills leaves unchanged the situation in which state insurance funds for workmen's compensation are operated by 18 states, of which seven are monopolies and 11 are competitive with private carriers.

• **Kentucky**—A bill enacted in Kentucky increased from $23 to $36 the weekly compensation payable to dependents of a fatally injured worker and raised the maximum liability from $8,500 to $9,500. Total disability benefits were increased from $2 to $27 a week and the liability limit increased from $10,000 to $11,500. For partial disability the payment rate was raised from $21 to $24 a week, and the liability limit increased from $8,600 to $9,500.

The Kentucky benefit liberalization bill also increased legal fees in workmen's compensation cases from 15 to 25% of the judgment, with the cost of such fees to be split between employer and employee. Under the old law, the employee paid the entire fee.

(Labor continued on page 54)

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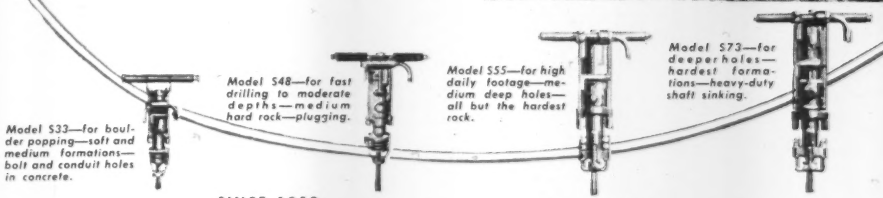

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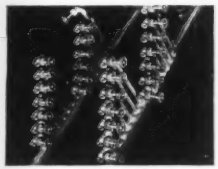

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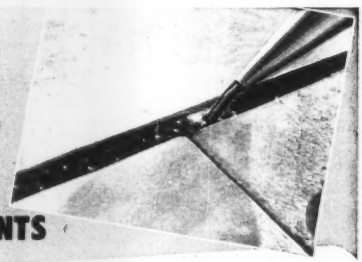

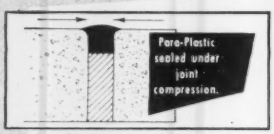

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WSB orders increased wage for Alaskan carpenters

The wage ceiling went up 20 cents an hour for more than 1,000 Alaska carpenters by order of the Wage Stabilization Board last week.

Both the Alaska Council of Carpenters, an 11-union group of almost all carpenters in the territory, and the Alaska chapter of the Associated General Contractors, which represents a majority of construction contractors in Alaska, are bound by the decision. Both sides agreed to accept the recommendations retroactive to Feb. 1.

Beaten man blames unions but agent denies charge

Violence flared two weeks ago when the foreman on a non-union pile-driving job at Cooper's Gully Bridge, near Orange, Tex., was beaten by "four or five men."

The foreman, B. L. Hale, works for John F. Buckner and Sons of Corsicana, Tex.

Hale told reporters he was sure his assailants were "union men."

George F. Cook, business agent for Piledrivers Local 1347, said no local union men were involved in the incident. "We have been negotiating with Buckner and Sons for a month and the union doesn't sanction this sort of thing. Our people have been told not to do business this way," he said.

WSB charges 2 more

Two more construction companies have been charged with paying excess wages by the regional Wage Stabilization Board at Denver.

M. T. Gerton and the Ferguson Plastering Co., both plastering and lathing contractors, are accused of paying up to $3.50 an hour for lathers while the legal rate was only $3. The complaint against Gerton also lists illegal payments to plasterers and hod carriers.

Total unauthorized payrolls—including the excess wage payments—were estimated at $205,000 by Gerton and some $23,000 by the Ferguson Co. While the commission can disallow the total payroll as an income tax deduction, usually only the excess payments are disallowed. This is said to be $14,000 in the case of Gerton and $3,100 for the Ferguson firm.

The two new complaints bring to five the number of wage violation charges filed in the region against construction contractors.

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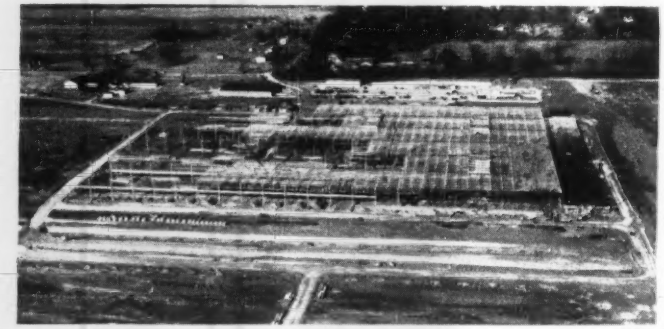

TOO MANY PROJECTS, like this first unit of the $300 million GE "appliance park" under construction in 1951 have created a fear that Louisville will "burst its britches."

Louisville leaders turn down A-plant as area expands fast within 4 years

When a city gets a billion dollar defense plant, that's news; when a city turns down a billion dollar defense plant, that's even more news.

Louisville, Ky., qualifies for the latter distinction.

This spring the Atomic Energy Commission went looking for a site in the Ohio Valley on which to build its newest atomic works. Louisville was high on its list. But business leaders and public officials from there went to Washington and buttonholed congressmen and AEC members for the unheard of purpose of lobbying against location of the plant there. Right now it looks as if their arguments were convincing.

To begin, Louisville already is up to its ears in new industries. Employment is at an all-time high. Construction is booming. Population growth is outrunning available housing and is straining the city's capacity to build enough schools, streets, water mains, and sewers.

In less than 10 years, Jefferson County, including Louisville, has gained 100,000 people and the metropolitan population now stands at nearly 590,000.

Over a period of years this growth would not be phenomenal. But much of it occurred in the brief span of about four years—roughly, since 1947. That date marks the beginning of a major industrial expansion involving hundreds of millions of dollars in new plant construction. Big companies—chemical, electrical and heavy and light manufacturing—have been moving into the metropolitan area and the surrounding area in a steady stream.

One result is that Kentucky no longer need depend solely on its whiskey, coal mining and tobacco industries for a livelihood.

By 1949, capital investments were being made at a rate of about $41 million annually. A year later this figure had jumped to $100 million and in 1951 it topped $1 billion.

Biggest project of 1951 was the $500 million atomic energy works at Paducah, Ky., but General Electric's $300 million new plant was not far behind. A $120 million TVA project in western Kentucky was third on the list.

• **1952**—The pace has not slackened in 1952. A $60 million to $70 million improvement program at Fort Knox, just outside Louisville, is under way. Another $65 million is being spent just across the river at Charleston, Ind., for rehabilitation of the big Indiana Ordnance Works, a major producer of smokeless powder in World War II.

Other big projects were: the $10.5 million Phillip Morris plant at Louisville and the $9 million expansion of generating facilities by the Louisville Gas and Electric Co.

• **Problems**—At least nine new communities have sprung up in Jefferson County, none of which were on the map in 1940. To keep pace with this growth, Louisville city officials have embarked on a major development program.

A substantial start was made in late 1950, when $13.5 million in bonds was voted for parks and recreational facilities, expressways, street and traffic improvements and the elimination of dangerous railroad grade crossings.

Another phase of the program will get under way this fall with a $9 million bond issue for other capital improvements.

A "must" project that is well along in the planning stage is an $11 million sewage disposal system and treatment plant to stop the pollution of the Ohio River. (Louisville now dumps about 100 mgd of waste into the stream.)

The need for a new bridge over the Ohio has become critical and a commission has been created to plan the $10 million span.

To handle rapidly increasing river traffic Port of Louisville, Inc. has been set up with private capital to build huge waterfront warehouses and adequate rail facilities. The $3 million project will be located on a 12-acre, city-owned tract that is under lease for 40 years.

At the expiration of the lease period the land and improvements will revert to the city.

• **Streets and expressways**—Louisville's biggest project, however, is a $96 million street development plan worked out on 1950 by Deleuw, Cather & Co. of Chicago.

In definite stages, it calls for 22 mi of expressways costing an estimated $54 million; centralization of the city's railroad passenger facilities in a $14.3 million terminal; and elimination of railroad grade crossings at a cost of $27.7 million.

The program will be financed with city, county, state and federal funds. Louisville's share is less than $22 million. City officials have indicated their willingness to hold up their end and have secured $8 million which is now being spent on the initial phases of the job.

• **State fair**—Louisville construction men also have their eyes on a $15 million state project which will give Kentucky one of the outstanding state fairgrounds of the country. A $6 million down payment on the layout has been made by the state and the rest will be available when needed. It is hoped to have the project available for the 1955 state fair. Units to be constructed include a 40,000 to

(*Continued on page 58*)

The Western notes now leave the ... colleagues have introduced of Mr. Hailey's package, too. ... against the curtain of darkness.

BIG "CAT" THAT GREW IN BROOKLYN

New Catalytic Refining Unit Produces

50% MORE HIGH-QUALITY MOBILGAS FOR NEW YORK AREA THIS WINTER!

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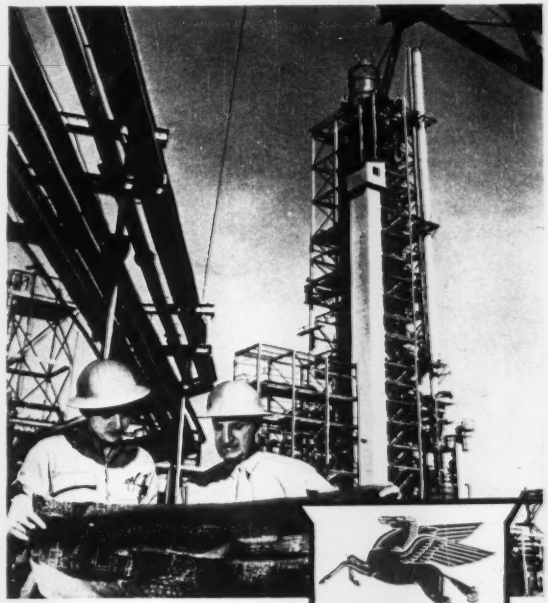

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State attorney balks at pollution crack-down

Efforts of the Pennsylvania State Sanitary Water Board to force 37 eastern and central Pennsylvania municipalities to proceed with sewage treatment projects, as a vital part of the state's stream cleanup program, were stymied when State Attorney General Robert E. Woodside Jr. asserted recently there would be no "hurried" prosecution of the communities failing to carry out the board's orders.

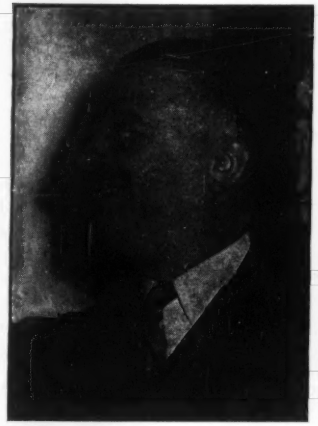
The board had earlier announced a "get-tough" policy (ENR June 5 p. 58) and served notice that the areas would be given no further extensions of time in which to get treatment work under way. At the same time it cited 37 communities to Woodside for prosecution. The municipalities have been under orders for a year to carry out anti-pollution plans.

"There will be no hurried wholesale action brought against municipal officials for failure to comply with orders of the Sanitary Water Board," Woodside declared. "It has been intimated that criminal action is about to be brought against several hundred elected municipal officials. Such action would not be taken by this department except after all other means of persuasion had been exhausted in cases of flagrant and persistent failure of the officials to carry out their duty to the commonwealth and the community. Wholesale action against the cited 37 separate governmental units would be without precedent in the history of the commonwealth."

"One of the communities listed for prosecution," he continued, "has failed to proceed with its plans because one of the departments of the commonwealth requested them not to do so on the basis it would interfere with proposed highway improvements. The commonwealth should not restrain with one hand and then attempt with the other to punish for failure to act."

Woodside's apparent reference to the State Highway Department brought a sharp denial from State Secretary of Highways Edward L. Schmidt, who told the press:

"We have not asked the city to hold up the work. At least a year ago,



ROBERT E. WOODSIDE, attorney general, says: "No hurried, wholesale action."

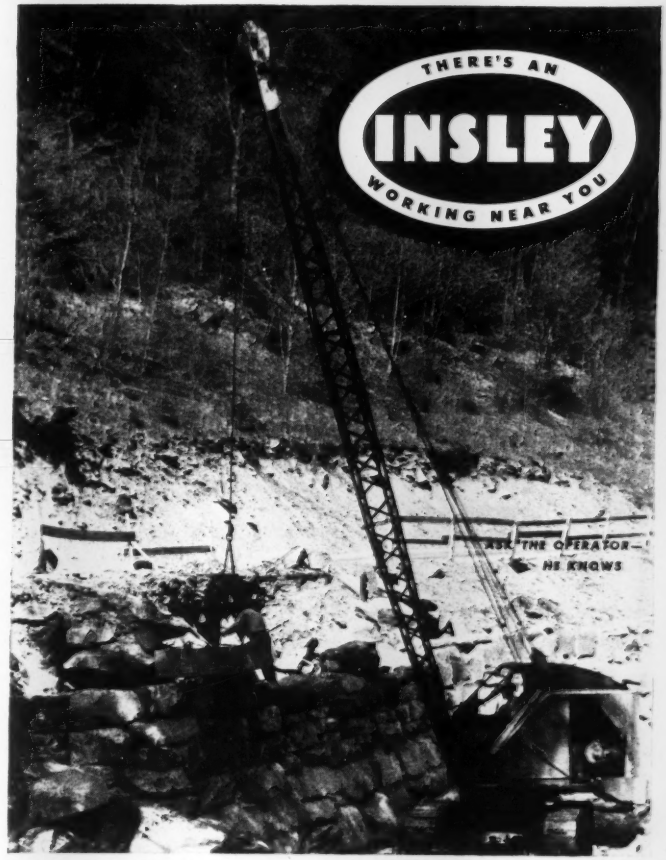
when we discovered that a pier of the proposed South Bridge (over the Susquehanna) would encroach on the site of the proposed sewage plant, we promptly met the city's asking price to permit the site of the plant to be shifted. The mayor, a full council, the city engineer and the city solicitor agreed to our payment of $24,500 to cover added costs. This agreement has been gathering dust for a year in Harrisburg City Hall without action. I want to make it very emphatic: We are not holding up the clean stream job in Harrisburg."

Woodside revealed that he was assigning a deputy to re-examine each case on the basis of the facts. Further, he said, the officials of each municipality would be given full opportunity to appear and state their side of the case.

"It must be understood, however," he said, "that any assessment of the facts must place emphasis in the commonwealth's policy of stream clearance."

The board's orders applied to municipalities in the Susquehanna River Basin, including the Juniata River and its tributaries. It was reported that after the board issued its orders, a storm of protest came from officials of the municipalities involved.

• **Other pollution news**—A joint contract for completion of the Campbell-Kenton Counties (Ky.) Sanitation District No. 1 project was awarded for $4.5 million. With completion of the project, northern Kentucky becomes one of the first areas in the state and the Ohio Valley to comply with the regulations of the Ohio River Valley Water Sanitation Commission.



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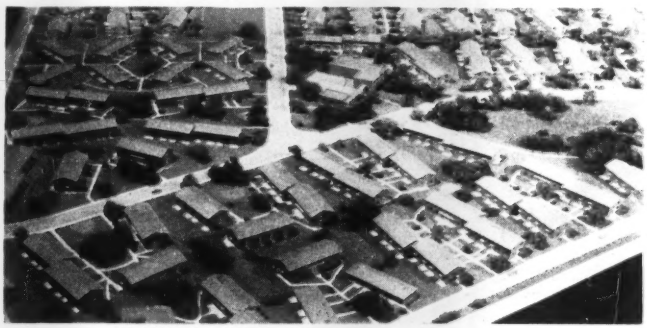

. . . will be replaced by modern units modeled here if

Norfolk's planned attack knocks down its slums

Years of planning and the setting up of a redevelopment and housing authority, which is determined to rid the city of its worst slums, are beginning to pay off for Norfolk, Va., as a healthier and more desirable place to live.

This month saw the Virginia Engineering Company begin laying the foundations for 752-housing unit Young Park which will replace one of the worst slum areas in the United States—a blot close to the edge of Norfolk's main business district.

One hundred and twenty-seven acres of slums, containing 900 substandard buildings housing 3,000 families, are scheduled to go within the next four years, under the Norfolk program. Already 280 of these structures have been bulldozed into oblivion.

• **Something more**—But Norfolk is getting something more than new buildings for old. As a result of its attack on slums, the city is also netting:

• A new street pattern by which narrow, but heavily traveled streets in the affected area, are being changed into high-speed boulevards. Twenty-eight acres of land go into wider streets.

• Thirty-five acres of land for light industry, on a strip 700 ft. wide and nearly a mile long paralleling a railroad and a new major highway.

(*Continued on page 62*)

BRIXMENT ASSURES A GOOD BOND

After all is said and done, the first function of a mortar is to form a good, tight *bond* with the brick. Upon this characteristic depend both the strength and the water-tightness of the wall. A good bond is particularly important in securing water-tight walls, because most cases of leakage are caused by the passage of water *between* the brick and the mortar.

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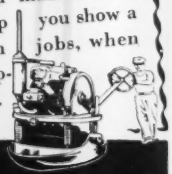

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Total project expenditures of the imediate Norfolk project are $7.2 million with a net project cost of $5.6 million. The city is putting $1.5 million in non-cash grants-in-aid and $388,867 in cash in the program and the federal government will match this on a $2 for $1 basis to make up the remainder of the net cost of the project.

A study on a racial basis showed that the Negro is the greatest sufferer from slums in Norfolk. As a result of this, the plans for public housing to replace slums will provide for 2,600 Negro families with 400 White families also benefiting.

Because of the necessity of providing living space for slum dwellers while the slums are being torn down, the Norfolk authority started more than a year ago building low-rent housing on vacant property in the city's outskirts. These are now being completed in such number that dispossessed slum families can be moved into them. One project, known as Moton Park with 140 units, was completed with 428 units, is about 90% completed and is half occupied.

• **Title I**—Norfolk is benefiting from a federal law which provides:

Federal loans to a local agency may be used for the acquisition of a slum area and for the removal of buildings and under certain conditions for the use of open land for housing development.

After the land is acquired, it can be leased or sold to private investors or to the city at its "use value" for any use tying in with the over-all redevelopment plan.

The federal government absorbs two-thirds of the loss resulting from the purchase of land and buildings. The city must supply the other third, but this does not have to be cash. It can, under certain conditions, be in the form of new streets, parks, schools or other improvements.

Norfolk sees nothing but profits despite the cost of its fight on slums. Like other cities, it finds the cost of policing and of fighting disease far higher in slums than in any other part of the city. And in its worst area—the 127 acres under immediate attack—many assessments have averaged only $400 a family which gives the city exactly $10.80 a year in revenue.

• Ten acres of land for the expansion of business area. Some of this may be be devoted to offstreet parking.

• Additional areas for parks, playgrounds and a new school with spacious grounds. The new school will be built on eight acres of land; the one it will replace is built on one half acre. The 127 acres in the immediate program are a part of an over-all 600-acre fight.

• **Planned attack**—Norfolk planned its attack on slums as early as 1940 with the creation of a housing authority. But the war intervened and as a result of the influx of servicemen and workmen in the city, the authority found itself the builder and operator of both permanent low-rent public housing and temporary war housing projects for defense workers. Meanwhile, the slums still stood.

In 1946, after an amendment to the Virginia Housing Authority law broadening the scope of the authority's activities, the Norfolk slum elimination program began to move forward. In November, 1948, the authority asked and obtained from the Norfolk City Council an appropriation of $25,000 with which to undertake a thorough survey of slums in Norfolk and to determine its program. The result was the decision that there were 600 unsightly acres of slums which should be eliminated.

Norfolk was prepared when, in 1949, the new housing act was enacted by the Congress. By anticipating the act's passage, Norfolk had set up a base for participating in the act's benefits. The result was that Norfolk was among the first cities to get the green light from Washington for Federal assistance in its slum fight. Highlight of the act is the authorization of the federal government to make loans up to a billion dollars and capital grants up to a half billion to aid localities in slum elimination. Norfolk is sharing in this money.

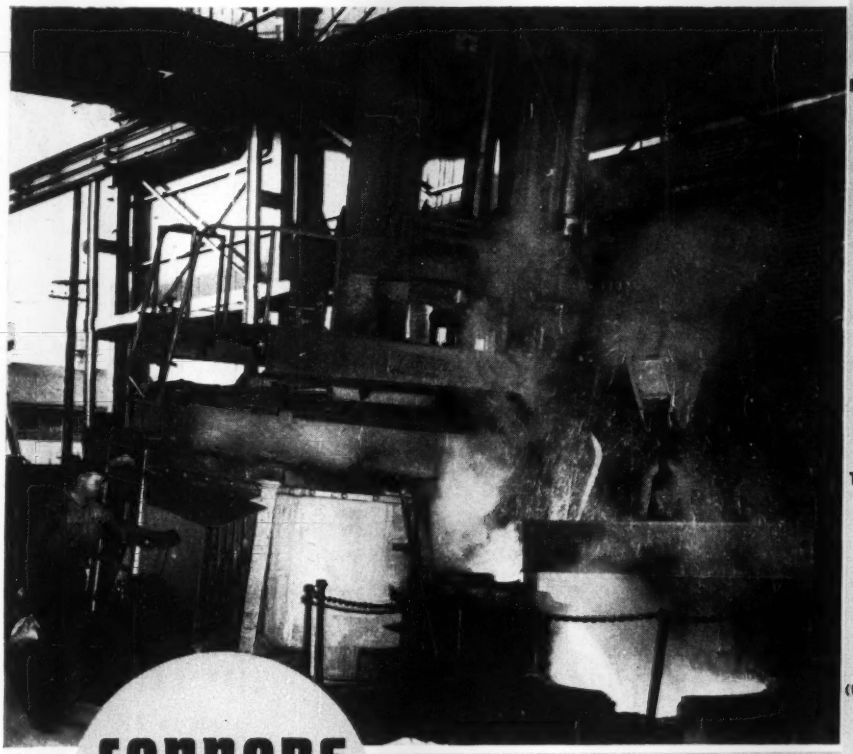
Company in hot water over lack of water

Accusations that the Philadelphia Suburban Water Co. exploited last week's heat wave to bolster its plea for new water sources has brought charges and countercharges.

It wound up with the Pennsylvania Public Utility Commission ordering an investigation of the operation of the privately owned utility firm that supplies water to thousands of homes in Delaware, Montgomery and Chester Counties, all adjacent to Philadelphia.

Everyone seems agreed that since the investigation started normal service has been restored.

Many residents of the tri-county area credit the investigation. The water company credits the easing of the heat wave.



CONNORS

New Electric Furnace Now In Action...

The picture on this page means good news for users of Quality Steel Products. It's good news because the picture shows CONNORS new electric furnace tapping its first heat. This furnace, CONNORS third, means a fifty per cent increase in the production of quality electric furnace steel.

CONNORS new furnace is but a part of the overall expansion program nearing completion here at this progressive Southern steel company.

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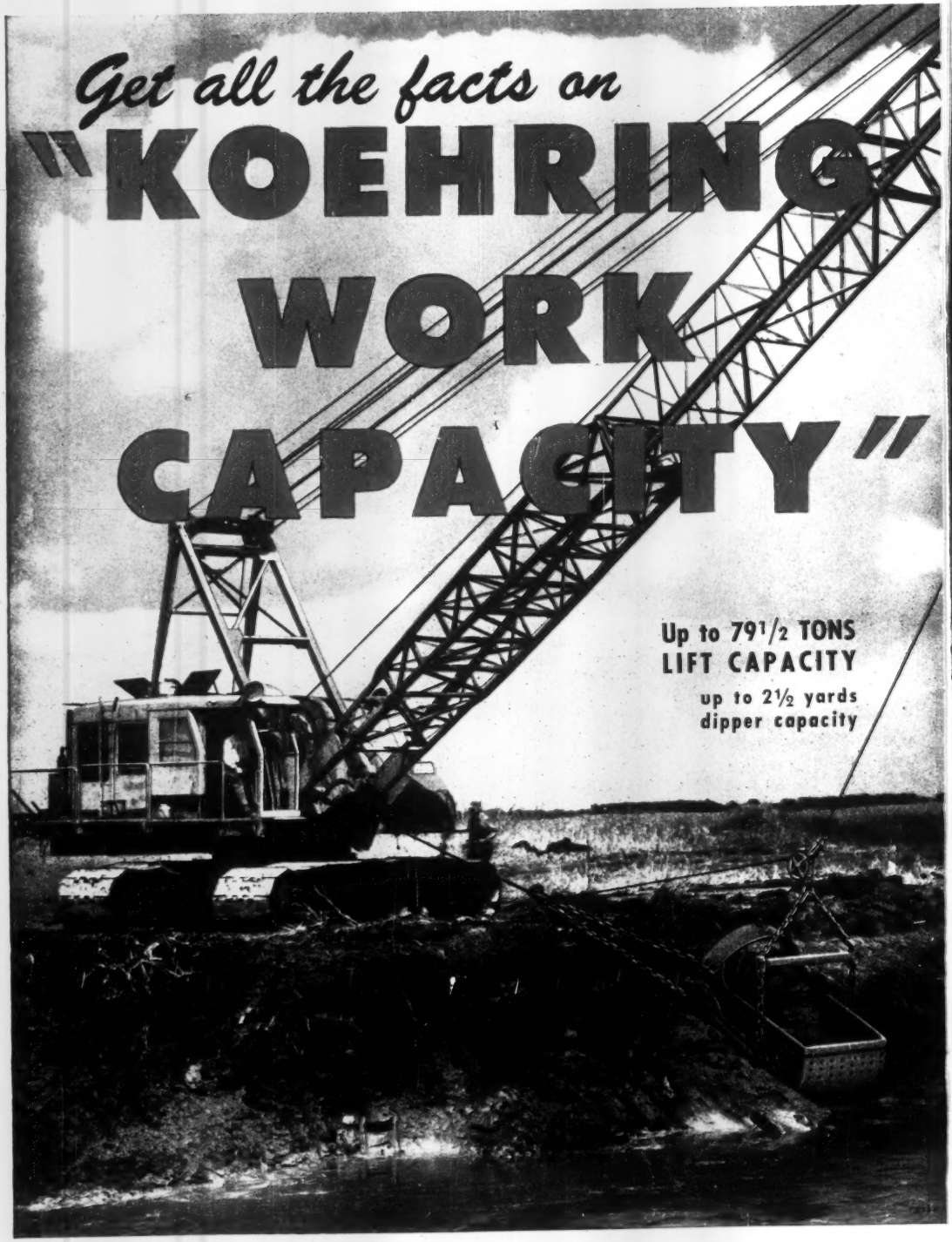
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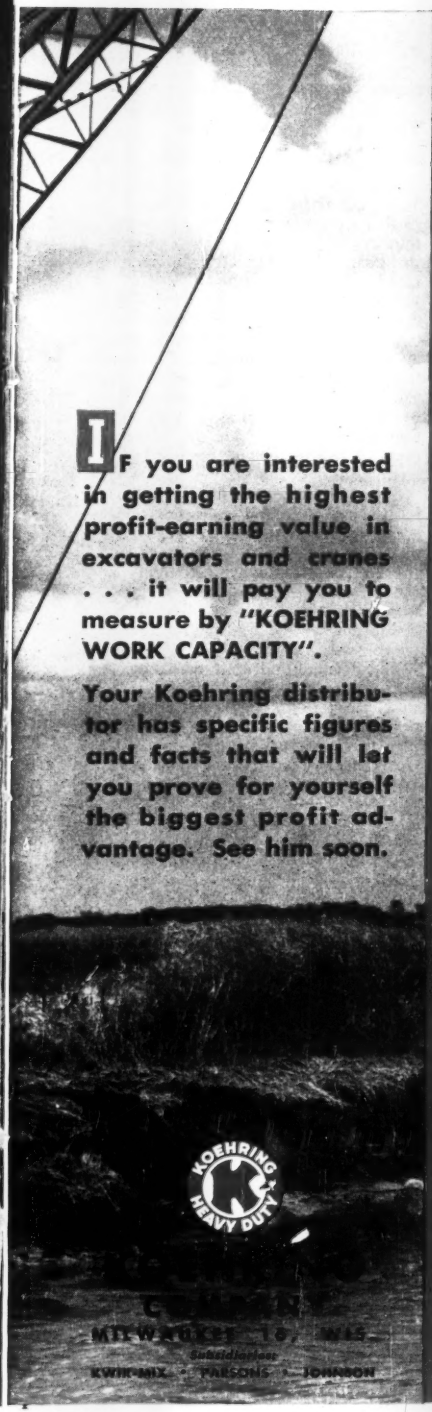

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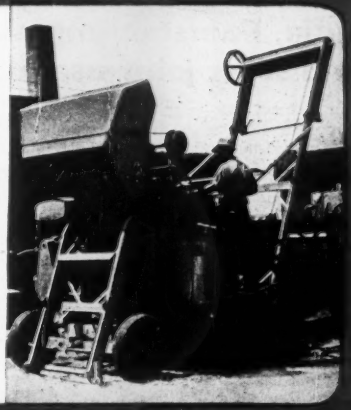

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A. N. Kohsla of India

Lt. Gen. R. A. Wheeler

India, Pakistan engineers meet to discuss joint use of Indus waters

In sessions that carry considerable political overtones, engineers representing Pakistan and India are meeting at Washington to discuss joint use of waters of the Indus River.

The immediate problem is utilization of the Indus which—since the postwar partition of India into two nations—has been cut by an international boundary that puts headwaters of the stream in India, the bulk of the stream's course in Pakistan. Plans of the Indian government for development of power and irrigation storage on these headwaters (including huge Bahkra Dam), plus Pakistani plans for dams further downstream, will come into inevitable conflict unless some working agreement is reached.

On June 13 the World Bank loaned Pakistan $3,250,000 to help transform 660,000 acres of desert into farm land. It is in the Thal Desert in the heart of West Pakistan, between the Indus and the Jelum rivers.

• **History**—The current Washington meetings are the culmination of previous negotiations between the World Bank and the two countries separately.

Loan negotiations between the bank and Pakistan started in the spring of 1951, and have included visits by bank officials to the Pakistan capital at Karachi. As a result of these negotiations, on March 27, 1952, the bank made its first loan to Pakistan—$27 million—to pay for railroad improvements and the like. Other projects, including hydro-electric work, are still under discussion.

India—which has also been negotiating agreements with other U. S. agencies (such as Technical Assistant Administration, and the U. S. Bureau of Reclamation) has also carried on lengthy talks with the World Bank over its plans for developments.

• **Personnel**—Representing India in the new negotiations is A. N. Kohsla, a civil engineer who is additional secretary to the Ministry of Natural Resources and Scientific Research; S. A. Hamid, chief engineer of irrigation, Punjab Province, for Pakistan; and Lt. Gen. R. A. Wheeler (Ret.) engineering advisor to the World Bank. Outside consultants have also been called in from time to time.

• **Reclamation mission also**—In the meantime, C. T. Douglass, Jr., and Fred H. Hartz, Bureau of Reclamation engineers, have gone to New Delhi to join the Point 4 reclamation mission now cooperating on dam and power plant design and construction problems in developing major river basins. They are serving as advisers to India's Central Water Power and Irrigation Board in the water resources development program, aimed at increasing food production, providing additional hydro-electric power, preventing soil erosion, and controlling floods during the monsoon season.

This project is being financed during the current fiscal year by a joint Indo-American Technical Cooperation Fund set up under a joint agreement.

("International" continued on p. 69)

Technical cooperation aids 12 million in India

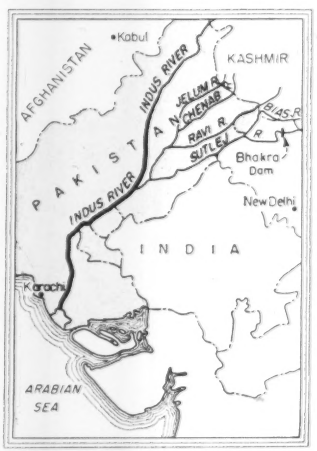
The governments of the United States and India have adopted a technical cooperation program for community development in 16,500 villages in India, with an estimated population of 12 million.

The program is in accordance with the Point 4 agreement between the two countries signed last Jan. 5, and involves about $100 million, the contributions being in the proportion of about 25% by the U.S. and 75% by India. The American contribution includes money for the salaries, expenses and equipment for 120 U.S. technicians.

The program includes irrigation, health measures and education. Its actual operation will be in the hands of a central committee appointed by the Indian government. A total of about 8,000 Indian supervisors and workers will be employed. The U.S. technicians will be available for advice on this work.

There will be at least one project in each of the 28 states of India. Provisions are made for reclamation of virgin and waste land, and obtaining water through irrigation canals and wells. The road systems will be improved to encourage motor transport.

As to the health phase, the program will include environmental sanitation, public health measures, and provision of improved drinking water supplies. Improved techniques for low-cost home building will be demonstrated.



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TRAVELING long distances to or from a job, this Harnischfeger Corporation P&H 255-A truck crane, with its boom folded, can travel 30 miles per hour! On the job, it has a 20-ton rated capacity, and can carry up to 120 feet of boom including the jib.

To carry the heavy loads and keep the crane on the go with minimum maintenance and timeout for repairs, Harnischfeger engineers have mounted the wheels, boom hoist drum and intermediate swing shaft on Timken® tapered roller bearings.

Timken bearings in the wheels permit high speeds because of their true rolling motion and incredibly smooth surface finish. Friction is practically eliminated, wheel maintenance reduced.

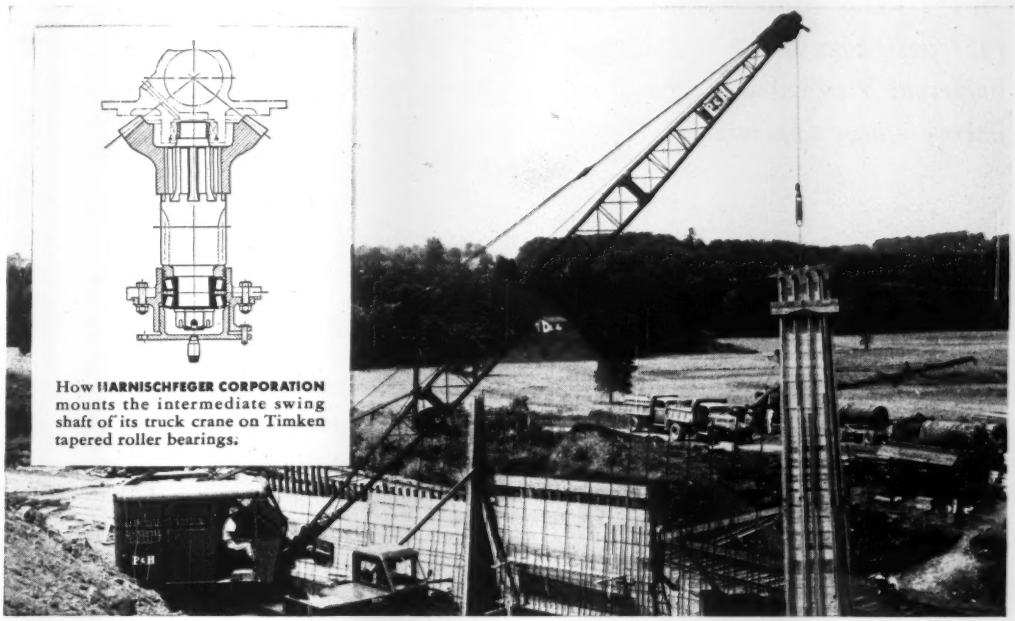
Due to their tapered construction, Timken bearings carry both radial and thrust loads in any combination. Line contact between their rollers and races gives them extra capacity to carry the heavy loads of the boom hoist drum. They hold the intermediate swing shaft in rigid alignment. As a result, gears mesh smoothly, last longer.

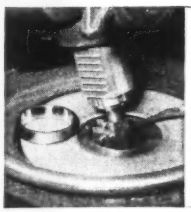
Timken bearings make closures more effective by holding shafts and housings concentric. Dirt and dust are kept out, lubricant kept in. Maintenance time reduced.

No other bearing can offer you all the advantages of Timken bearings. Be sure to specify them for the machines you build or buy. Look for the trade-mark "Timken" on every bearing. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

This symbol on a product means its bearings are the best.

How **HARNISCHFEGER CORPORATION** mounts the intermediate swing shaft of its truck crane on Timken tapered roller bearings.





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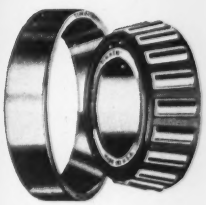
Finishing to incredible smoothness accounts for much of the precise, smooth rolling performance of Timken bearings. This honing operation is typical of the amazingly accurate manufacturing methods at the Timken Company.

The Timken Company is the acknowledged leader in: 1. advanced design; 2. precision manufacturing; 3. rigid quality control; 4. special analysis steels.

TIMKEN

TAPERED ROLLER BEARINGS



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Edgewater Park Project

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Rexon Coated with Tylox Rubber Gaskets

L. A. Wells Construction Co., Cleveland Contractor
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Sewer Pipe (Concrete)	Segment Sewer Block	Stove Pipe
Vitrified Liner Plates	Meter Boxes	Chimney Tops
Tylox Flexible Rubber Coupled Vitrified Pipe	Ship Lap Wall Coping	Chimney Pots
Aerodrone Filter Block	Septic Tanks	Fire Brick
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Vitrified Clay Plate Lined Concrete Pipe

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Seven Brazilian utilities get large bank credit

A credit of $41,140,000 has been granted by the Export-Import Bank of Washington to seven electric utility operating companies in Brazil. The purpose of the credit in the main is to finance the purchase of U.S. materials, equipment and services for an electric expansion program with a total cost equivalent to more than $98 million.

The seven companies are subsidiaries of the Brazilian Electric Power Co. which, in turn, is a subsidiary of the American and Foreign Power Co, a U.S. company which serves a number of electric utility companies operating in Latin America, its securities being widely held by private investors in this country, and forming the largest U.S. investment in Brazil.

The seven companies are: Companhia Purlista de Forca e Luz, Sao Paulo; Companhia Forca e Luz do Parana, Curityba; Companhia Brasileira de Forca Electrica, Rio de Janeiro; Companhia Forca e Luz de Minas Gerais; Companhia Forca e Luz Nordeste do Brazil, Maceio and Natal; Companhia Energia Electrica do Bahia; Companhia Central Brasileira de Forca Electrica, Vitoria.

International briefs

• **Bogota housing**—Work has started on an $8-million housing project in Bogota, Colombia. It will consist of six blocks of 4-story buildings with 96 apartments of 4 bedrooms; five blocks of 13-story buildings with 480 apartments of three bedrooms; and four blocks of 13-story buildings with 384 apartments with two bedrooms. On the grounds will be a church, a school, a theater, a library, and other community services.

• **Rhodesian railways**—Work has begun on the construction of a 14-mi railway from the Guija railhead to the Limpopo River. When completed, this line will give Rhodesia a new sea outlet. Later the railway will cross the big irrigation dam to be constructed on the Limpopo. Thence it will be extended to the Southern Rhodesian border to link with a line now being built to Lourenco Marques by the Southern Rhodesian government.

• **Pan American Highway Congress**—An extraordinary session of the Pan American Highway Congress will be held at Mexico City from Oct. 26 to Nov. 10, 1952.

Preferred power on portable fire fighting pumps and floodlight electric plants — the world's most widely used single-cylinder gasoline engines on machines, tools, appliances used by municipalities, industry, construction, railroads, oil fields, and on equipment for farm and home.

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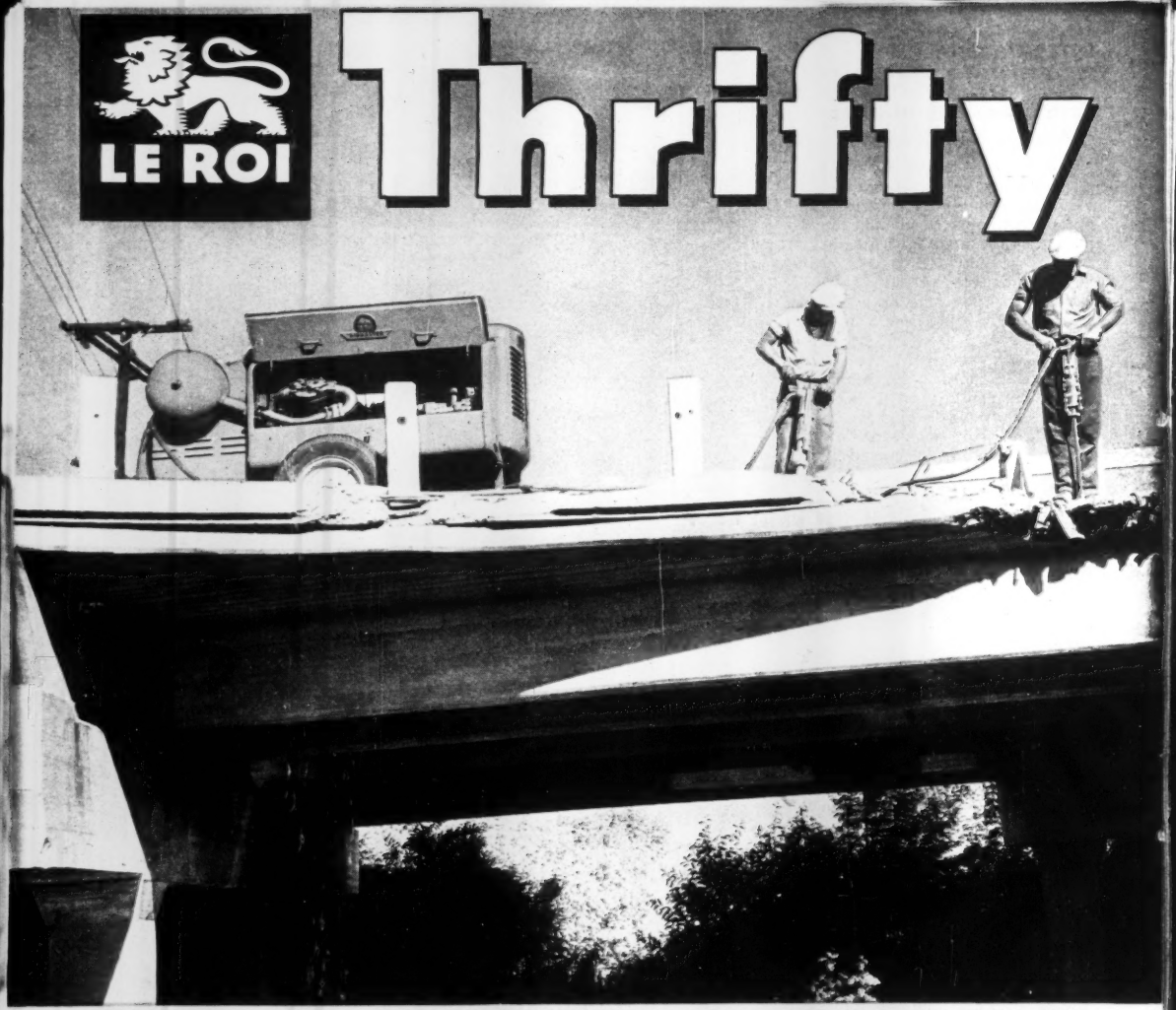
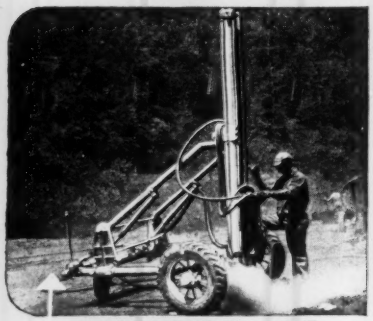
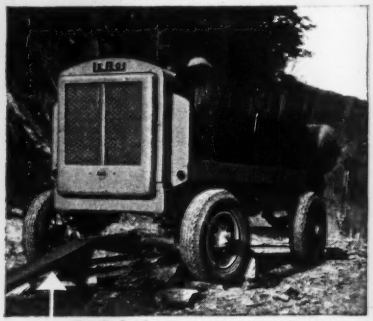


LE ROI GIVES YOU MORE FOR YOUR MONEY!



Le Roi-CLEVELAND Wagon Drills put your deep holes where you want them for better breakage, lower costs. Drill at any angle. 4" bore, powerful force of blow, strong rotation, thorough hole-cleaning action. Higher drilling speed with big bits. For shallow holes, the lightweight DR34 unit is your best bet.



Le Roi Airmasters have 10% to 30% lower piston speed—for less wear, longer life, lower fuel consumption. Heavy-duty Airmaster engine is designed especially for compressor service — it is not just an automotive unit slowed down. Airmasters stay on the job longer, produce more air for less. Sizes, 60 to 600 cfm.

Le Roi-CLEVELAND Sinkers have strong rotation, powerful blow from snappy valve action. Drill more inches per minute. Easy to hold, kickback is reduced. Operators get less tired, drill more feet per shift. Sizes, 17 to 82 lbs., including the popular H10 and H111.

Team cuts costs with plenty of air, plenty of wallop

Le Roi Airmaster Compressor and Le Roi-CLEVELAND Rock Drills and Paving Breakers

HERE'S a team you can't beat — and here's why:

First of all, you've got a Le Roi Airmaster Compressor. Airmaster dependability means air in a hurry — as much as you want — when you want it! Airmaster construction features mean longer engine life, less maintenance, lower operating costs.

Then, you've got Le Roi-CLEVELAND air tools. Their exclusive valve action assures low air consumption — high air pressure at the tools. They really stand up, too — break more pavement, dig more clay, drill more rock, tamp more fill.

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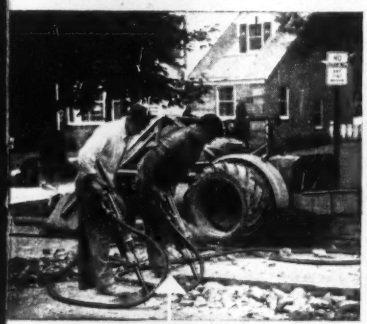

Le Roi-CLEVELAND Breakers and Spades pack plenty of punch for speedy work in the hardest concrete or stiffest clay. Protective air-cushion in front end assures long life. Well balanced for easy handling. That's why operators like them — do more work with them. Sizes, 18 to 80 lbs.

Tractair is a combination tractor-105 cfm compressor that can be equipped with a wide variety of attachments. Does the work of specialized equipment — breaking, drilling, digging, tamping, loading, lifting, backfilling, snow-plowing, etc. Saves you money on initial investment and on job costs.

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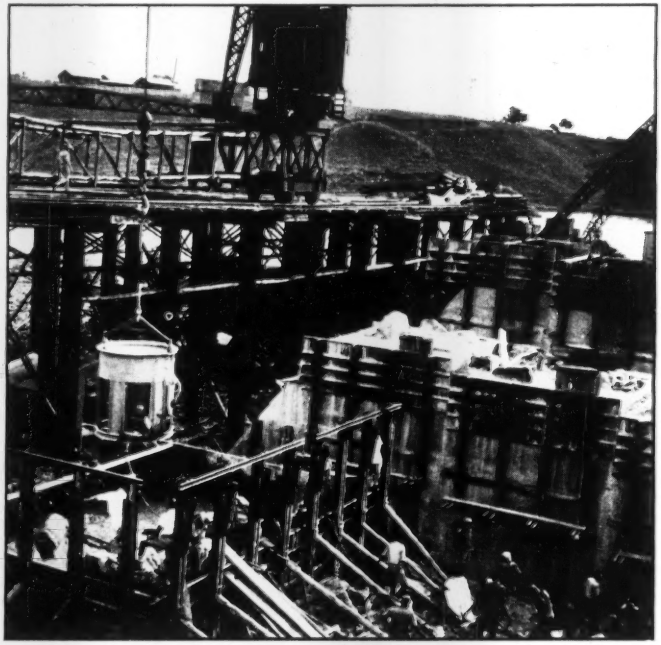

OWEN FALLS DAM TAKES SHAPE—Construction work has well started on the Owen Falls Dam project at the source of the White Nile, 3,496 mi from the mouth of the Nile in Egypt. Across the 80-ft gap through which the river rushes from Lake Victoria at the rate of 22,500 cfs, the caging for the cofferdam is gradually extending. Engineers are also building the power station to house the turbines which will turn the Nile's torrent into electricity for the industries of Uganda. The dam also will hold back water to be released later to aid Egypt's agriculture in the dry season.

New efforts are being made to solve Egypt's water problem

Besides the work on the Owen Falls Dam at the source of the White Nile which eventually will retain water to be released to help Egypt's agriculture in the dry season, there is encouraging news about the Aswan Dam hydro-electric project.

It is said now that contracts for the project will be awarded this summer after the cabinet approves the winning bid for the main hydro-electric plant.

Once the cabinet approves the winning bid, the commission will then reach an agreement with the contractor on the eventual differences in the price of raw materials during the execution of the project, and those accepted now.

Meanwhile the Egyptian government has made several new adjudications for auxiliary works on the hydro-electric project not included in the main tender. One such adjudication is for the supply, erection, and maintenance of air conditioning and ventilation systems for the offices and workshops on the west bank of the Nile and also for the filter and diesel station, all according to specification.

Another adjudication is for the supply, erection, and maintenance of mobile cranes and elevators required for the power plant.

Another is for supply, erection and maintenance of machine tools and accessories for the workshops of the hydro-electric power station. The tender documents comprising conditions of contract, specifications and drawings for each of these adjudications may be obtained from the Egyptian Embassy in Washington or consulting engineers of the Egyptian government, Messrs. Kennedy and Donkin, 12 Caxton Street, London S. W. 1.

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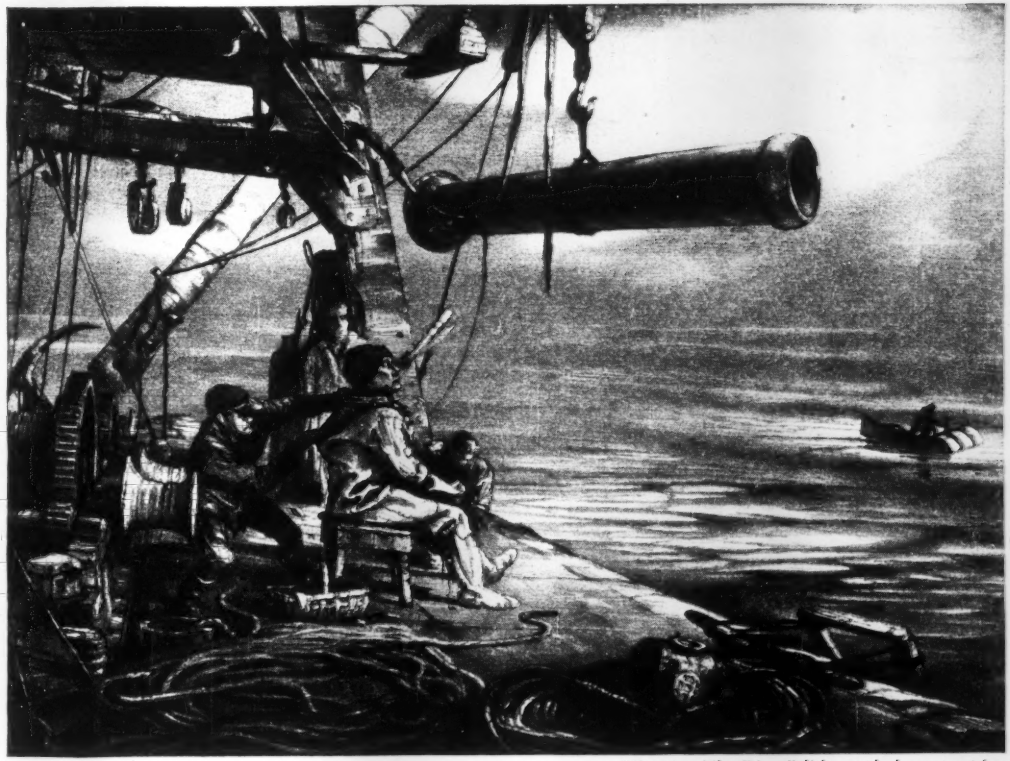

"Dressing The Diver," lithographed on stone for U.S. Pipe and Foundry Co. by John A. Noble, A.N.A.

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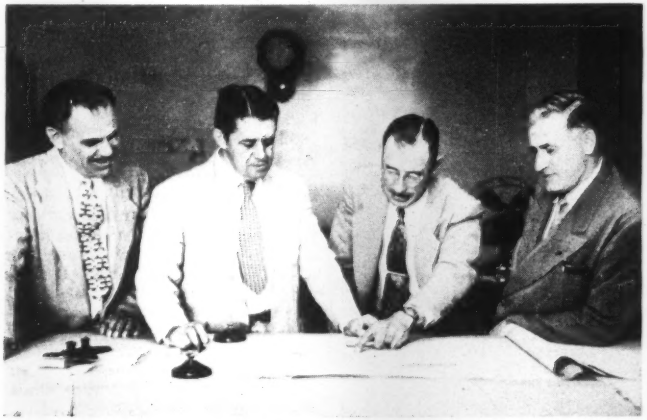

ENGINEERS AND CITY LEADERS (left to right) G. Arthur Faneuf, Superintendent of Water Works; City Manager Woodbury Brackett; Public Works Commissioner Wesley E. Haynes; Assessor C. Fred Moulton.

New England capital led by engineers

Engineers play a significant role in the administration of Concord, New Hampshire's capital city. City Manager Woodbury Brackett got his degree in civil engineering from Columbia University, and three of his municipal department heads have engineering degrees or professional registration as engineers.

• City Manager Brackett did field engineering in Virginia for a New York firm before taking his first job as town manager in Maine. In his 25 years he has served as first manager of seven consecutive cities and towns of Maine, Vermont and New Hampshire before taking his present position in Concord.

• Public Works Commissioner Wesley E. Haynes received his degree in civil engineering from the University of New Hampshire in 1934. He was bridge engineer for the Federal Bureau of Public Roads in New Hampshire and Vermont before taking his present city position last December. Haynes took over the public works department after a decade in which little or no new construction had been undertaken. He already has mapped about $600,000 worth of new street construction which will be let to contract this fall, and is studying a million-dollar sewer reconstruction program which may start next year if approved.

• G. Arthur Faneuf, PE No. 289 (NH), is superintendent of the municipal water works, recently completed the installation of new chlorination equipment and fluoridation apparatus. He was deputy city engineer for a dozen years before transfering to the water department in 1945 as assistant superintendent, later succeeded to the superintendent's job on the death of Percy R. Sanders.

• C. Fred Moulton, PE No. 415 (NH), is city assessor. He is also a former deputy city engineer who transfered to the assessing department in 1950. Since then he has scrapped the old "squint-and-guess" system of property assessment to tax purposes, and has supervised a $36,000 appraisal of the city's taxable property by Cole-Layer-Trumble company of Dayton, O. Beside a sweeping revision of the city's property tax lists, Moulton brought about mechanization of the listing operation, has set up new files and billing methods, and has reduced his department's over head. Assessments now are based on unit values derived from type and age of construction and other physical measures of property. All land in the city and all buildings, have been sketched to scale on the new assessment cards, for permanent record.

Engineers are also found in the policy-making branch of the city government. Two members of the city

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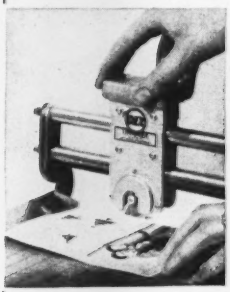

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And the right kind of screen in a well is about as important as is the right kind of motor in an airplane. Fifty years ago, Layne bucked the screen problem and came up with something that hasn't been matched by any other manufacturer.

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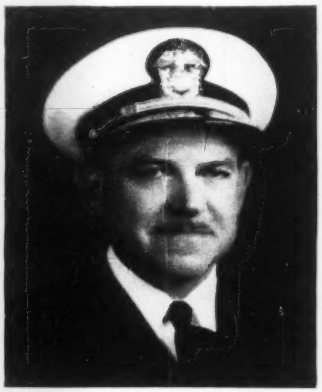
council—Conrad W. Robinson and Leigh S. Hall—have engineering degrees.



REAR ADMIRAL ROBERT STUDDS, Director of the Coast and Geodetic Survey.

Survey congress high post goes to coast survey head

Rear Admiral Robert Studds, Director of U. S. Coast and Geodetic Survey, was recently elected president of American Congress of Surveying and Mapping. He succeeded George Harding.

Admiral Studds has served as director of USC&GS since May 1950.

He graduated from Catholic University of America in 1917 with a degree in civil engineering.

Upon release from service in World War I (472nd Engineers), he entered the commissioned service of the C&GS in 1919 where he served successively through the various ranks to his present position. Twenty-three years of field duty are included in this service during which Admiral Studds served in various shipboard capacities, including commanding officer of a number of survey ships.

Among his field assignments in hydrographic surveying was the execution of the first surveys along the rugged north coast of the Island of Luzon, largest of the Philippine Islands. This work was done in the path of devasting typhoons.

In recent years, Admiral Studds commanded the modern survey ship "Pathfinder" surveying waters of the strategically important Aleutians.

Under his command, electronic methods of position fixing were first used in control of surveys.

The new method uses the knowledge developed during the war in pinpoint aerial bombing.

Home building courses spread in universities

At least forty-four colleges, universities and engineering schools give courses in building construction, including home building, that lead to BBS. degrees. A sampling survey of 785 members of the National Association of Home Builders just completed, has turned up that number.

Leonard G. Haeger, director of the NAHB Technical Research Service, made the quick rundown for the benefit of the association's new committee on professional training.

The committee was formed this year to encourage production of professional people technically trained for design, construction and operation of everything that goes into a housing project, from individual dwelling units to community facilities.

Fuller investigation is expected to turn up a few more schools giving degree courses. The preliminary list runs alphabetically from the Alabama Polytechnic Institute at Auburn to the University of Wyoming at Laramie.

Also uncovered in the preliminary survey were 28 schools, or extension services that offer short courses in building and home construction, and 27 that give night courses. Five of them offer all three kinds of courses; 11 others give two types, predominantly the short and night courses.

In all, the sampling survey turned up 70 schools, and university extension services that carry building courses in the curriculum. All but seven in the list are college-grade institutions.

Burton G. Dwyre dismissed as state highway engineer

The recent dismissal of Burton G. Dwyre, New Mexico highway engineer, came as a surprise to the state's construction industry. His 22-year record with the department had been good.

Highway Commissioner Chairman Ralph Jones put the question of Dwyre's retention on a commission meeting agenda without consulting other commission members. He said that some members had expressed dissatisfaction with the management of the department.

When the commission split on the question, with one Democrat and one Republican for and the same alignment against, Jones, a Republican, cast the deciding vote.

Dwyre was a holdover under the present Republican governor from past Democratic administrations.

Dwyre will enter private practice.

Oscar E. Hewitt quits as Chicago city official

Oscar E. Hewitt, Chicago Public Works Commissioner for 20 years has handed his resignation to Chicago's Mayor Kennelly.

First appointed commissioner by the late Mayor Cermak in 1932, Hewitt is 75. He had planned to leave office July 1, but was persuaded to remain on the job until September or until a successor is found.

A former newspaperman, Hewitt was named Assistant Public Works Commissioner in 1909. Two years later he joined the editorial staff of the Chicago Tribune where he remained until his appointment in 1932. As commissioner, he has served three mayors and is the oldest cabinet member in point of service.

Last month, Hewitt clashed with the corporation counsel over an investigation of ghost payrolls. He conducted his own investigation and as a result, two employes were indicted. However, Hewitt has denied that this disagreement influenced his resignation.

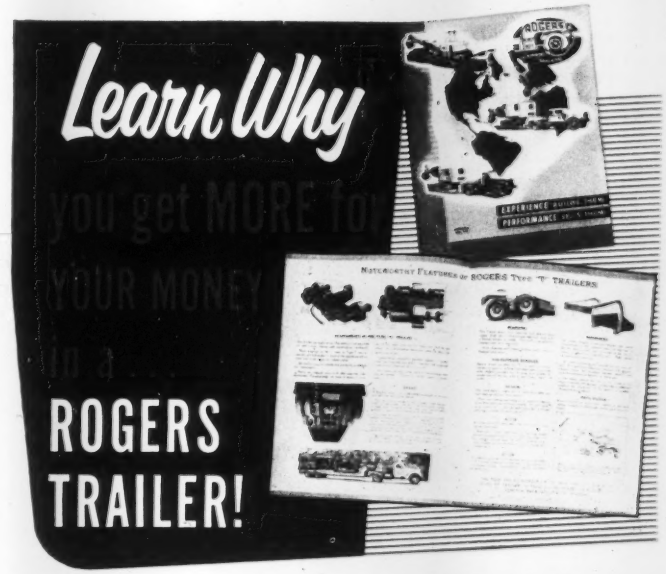
Okun to sub at N.C. while Baity is abroad

Daniel A. Okun will go to Chapel Hill in September to take over course work of Prof. Herman G. Baity, who is in Geneva for two years as head of the division of environmental sanitation of UN's World Health Organization. Prof. Baity, head of the sanitary engineering department at University of North Carolina, sailed May 29 for his new post (ENR April 10, p. 93). Acting head of the department during his absence will be Prof. Emil T. Chanlett.

Okun plans to initiate research projects in sanitary engineering problems, their exact nature yet to be determined. He did his own graduate work at Harvard and will be on leave of absence from Malcolm Pirnie Engineers, of New York, for the two-year duration of his teaching assignment.

Careers . . .

• **Appointed**—Dr. **John R. Nichols**, Palo Alto, Calif., will leave this week for Cairo where he will take over duties as U.S. Director of Technical Cooperation in Egypt under Point Four. Dr. Nichols has been with the Federal Civil Defense Administration, serving as director of the Western Training School, St. Mary's College, Calif. . . . Promotion of **George E. Dent** to the post of division engineer



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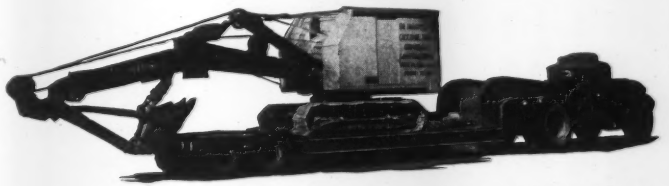

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of Asphalt Institute was announced recently . . . The Virginia State Highway Department has appointed former **State Bridge Engineer William R. Glidden** as new assistant chief engineer of the department. Glidden's successor as bridge engineer is John N. Clary . . . **Col. Herbert D. Vogel** will succeed **Col. Louis W. Prentiss** as southwestern division engineer, Corps of Army Engineers. Col. Prentiss has been named Assistant Chief of Engineers for Personnel and Administration in Washington, D. C.

Assignment of **Col. Leland H. Hewitt,** Army Engineer in the Caribbean since 1949, as New England division engineer at Boston has been announced . . . **Mark E. Thomas** is the new sanitation engineer for District 11 in California's Santa Clara County. At the same time, **County Engineer Robert B. Chandler** was appointed Chief Flood Control Engineer for the county. **Col. L. E. Seeman,** Alaska District Engineer last month completed a 3-year tour of duty. He is succeeded by **Col. Lewis H. Foote** . . . **Elmer R. Queer,** professor of engineering research and assistant director of the engineering experiment station at Pennsylvania State College will head the engineering research department . . . Appointment of **Allen E. Gifford** as manager and assistant treasurer of the Master Builders Association of Boston was announced recently by the association.

• **Elected**—**G. Donald Kennedy,** consulting engineer and former assistant to the president, Portland Cement Association, has been elected vice president of that organization . . . New president of McNamara Construction Co., Ltd., in Toronto is **S. J. Bird,** vice president since 1940 . . . **William H. Eipel** of Tuck and Eipel, New York, has been named president of the Structural Engineers Society of New York . . . New president of the metropolitan New York chapter of the Construction Specifications Institute is **Joseph A. McGinnis** . . . **Daniel J. O'Connell,** associate professor of civil engineering at Manhattan College, will head the Bronx County Chapter of the New York State Society of Professional Engineers.

• **Honored**—By order of President Truman, **Dean S. M. Steinberg,** University of Maryland College of Engineering, has been awarded a special certificate of merit for his work as chairman of the committee on education of the President's Conference on Industrial Safety . . . An honorary degree of doctor of science was conferred upon **Capt. Gilbert T. Rude, USN,** by Washington College, Chestertown, Md. . . . F. R. Whiet, chief engineer for the Iowa Highway commission received the Chicago Alumni merit award at Iowa State College's alumni day . . . An honorary membership in the Institute of Traffic Engineers was presented posthumously to **Roger L. Morrison,** former Professor of highway engineering at the University of Michigan . . . **Wesley W. Horner,** Horner & Shifrin, St. Louis, received an honorary doctor of engineering degree from Washington University . . . An event of Reclamation's golden jubilee celebration in Greeley, Colo., was the presentation of the Department of Interior's service award to **Charles Hansen,** president of the Northern Colorado Water Conservancy District.

• **Resigned**—**E. T. Stearns** has resigned his post as director of the Federal Housing Administration office in Fort Worth, Tex.

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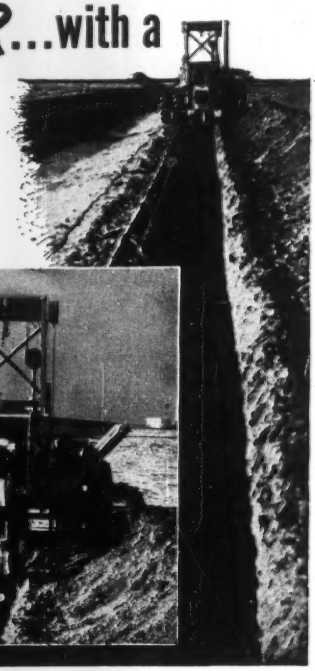

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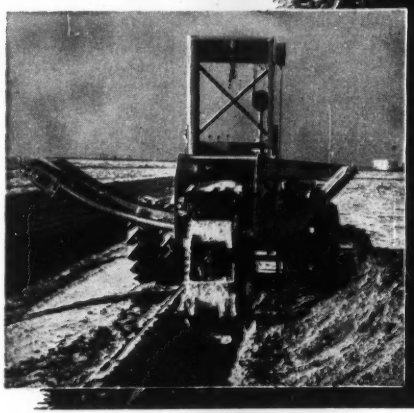

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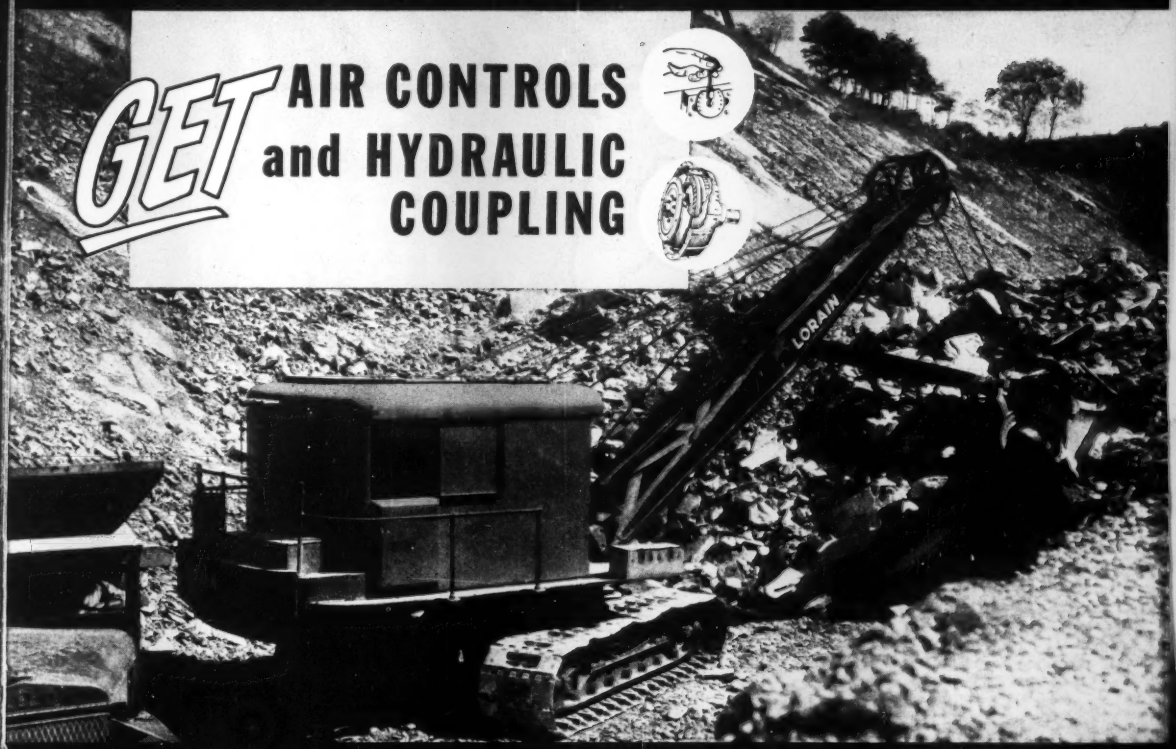

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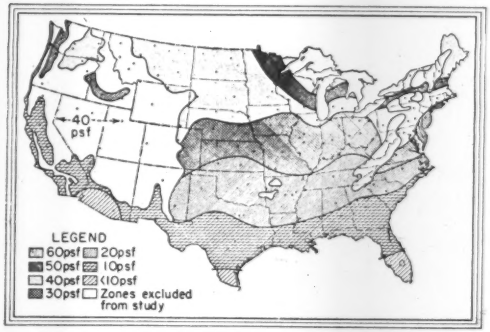

FIG. 1. MAXIMUM SNOWPACK of record varies in weight throughout the United States, as indicated in the above chart, based on Weather Bureau data.

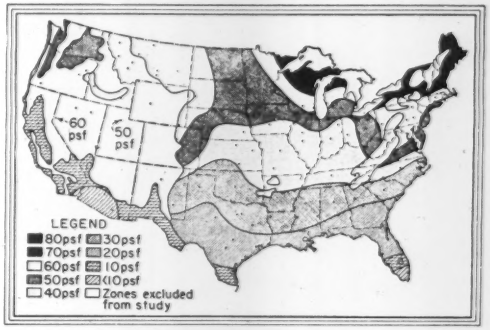

FIG. 2. FAILURE-LOAD CHART gives weight of estimated maximum accumulation on the ground plus weight of maximum probable snowstorm.

HHFA recommends more realistic roof loads

Research sponsored by the Housing and Home Finance Agency may make possible safer or more economical roof design for buildings throughout the United States. HHFA has studied available data on actual snow loads and now can recommend vertical live loads for roofs more in accordance with loadings likely to occur than has heretofore been feasible.

Recommended live loads are given in Tables I and II. (Snow loads are not a governing consideration in southern states; hence, existing building-code recommendations are given for those areas.) Loads for sloping roofs (Table II), which have a rise of 3 in. per ft or more, are less than those for flat roofs, because snow retention is less on a pitched surface.

The snow loads on which these live-load recommendations are based were determined from a study of Weather Bureau data collected during the past 50 years. This information was used to plot charts indicating snow loads to be expected in various parts of the country (Fig. 1 and 2).

The research project was sponsored by the HHFA Division of Housing Research, Joseph H. Orendorff, director. The Weather Bureau study was started under the supervision of Merrill Bernard and completed under W. E. Hiatt. Results were interpreted by William A. Russell, HHFA structural engineer. A complete report is given in Housing Research Paper No. 19, "Snow Load Studies," obtainable from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.

To arrive at the design loads, it was necessary to know the maximum weight of snowpack that could be expected in a given area and the relative frequency of heavy snow pack. The weight of snow pack that would be expected to be equalled or exceeded at least once in 10 years was selected after study as fulfilling the criteria for design-load frequency. It was also believed that a combination of the maximum water equivalent ever observed with that of the maximum probable snowstorm would yield a reasonable estimate of the failure load. A factor of safety of 2½ was assumed.

The design vertical live loads given in the tables should be combined with the vertical component of wind and earthquake loads that might be expected to act on the roof, as well as with dead loads and operational loads.

TABLE I—FLAT ROOFS

Minimum Uniformly Distributed Design Vertical Live Roof Loads

	PSF
Flat roofs and roofs having a rise of 3 in. per ft or less:	
Southern States	20
Central States	25
Northern States	30
Great Lakes, New England, and Mountain areas[1]	40
Flat roofs used for sun decks[2] or promenades	60

[1] Great Lakes and New England areas include northern portions of Minnesota, Wisconsin, Michigan, New York, and Massachusetts and the States of Vermont, New Hampshire, and Maine. Mountain areas include Appalachians above 2,000-ft elevation, Pacific Coastal Ranges above 1,000-ft elevation and Rocky Mountains above 4,000-ft elevation.

[2] The 60-psf minimum load specified by most building codes for flat roofs used for sun decks or promenades is governed by operational loads, such as a crowd of people, rather than by snow load.

TABLE II—SLOPING ROOFS

Minimum Uniformly Distributed Design Vertical Live Roof Loads

	Pounds per square foot of horizontal projection			
Slope:	3 in 12 or less	6 in 12	9 in 12	12 in 12 or more
Southern States	20	15	12	10
Central States	25	20	15	10
Northern States	30	25	17	10
Great Lakes, New England, and Mountain areas[1]	40	30	20	10

[1] These areas are the same as described above for flat roofs.

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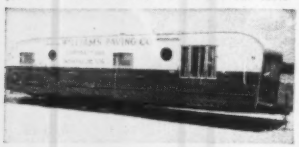
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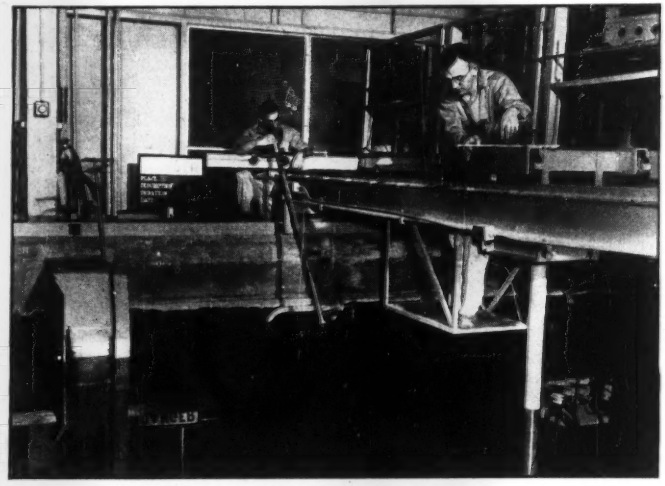

UNDERWATER RE-ACTOR—A nuclear reactor of 10 kw is set up for operation under the water of the "swimming pool" bulk shield testing facility at Oak Ridge National Laboratory. J. K. Leslie, observing through a telescope, gives directions as Leo Holland locates an instrument to measure neutron flux about 15 ft below the surface. This low cost, low power reactor, being used to aid development of improved reactor shields, also is a promising type for nuclear investigations at universities and non-AEC laboratories.—Oak Ridge National Laboratory photo.

"Cheap" atomic reactor seen suitable for school experimental use

A "bargain basement" model of a nuclear reactor, said to be suitable for installation in schools and other research and training laboratories has been developed by the U. S. Atomic Energy Commission. Known as the "swimming pool," the reactor is entirely under water to protect operators from radiation. Built at Oak Ridge as part of a bulk shield testing facility used for experiments to aid development of improved shields, the entire facility was built for less than $250,000, exclusive of fuel.

Of that amount, the reactor core itself cost only $58,400, the rest of the cost being for concrete work, the building and auxiliary equipment.

The "swimming pool" reactor has a continuous, full-load power rating of 10 kw, at which it produces a maximum flux (neutron density) of about 100 billion thermal neutrons per square centimeter per second.

The reactor itself is submerged in a pool of water 20 ft deep, 20 ft wide, and 40 ft long, in which it can be moved about.

• **Reactor component**—The reactor itself is an assembly of movable fuel elements placed on end in an aluminum grid. It is suspended by an aluminum framework from what is called the reactor bridge, which spans the pool. The bridge rests on wheels fitted to rails along either side of the pool so that the reactor can be moved along a center line. Similarly, an instrument spans the pool and operates on the same rails. A steel framework attached to the movable mechanism of this bridge extends nearly to the bottom of the pool. Using a carriage that slides up and down on the framework, operators can place test instruments at any point in the pool.

Centered on the bottom surface of the pool is a well, 14 ft square and 5 ft deep. This is filled with removable blocks of high-density concrete, giving part of the pool an adjustable floor level for more flexibility in placement of shielding samples and instruments.

The "swimming pool" is housed in a steel frame building, with corrugated metal siding, 38 ft high, 77 ft long and 51 ft wide. In addition to a bay housing the pool, the building has 3,000 sq ft of office and shop space.

• **Uses**—A useful feature of the facility is an aluminum gate, 12 ft high and 21 ft long, spaced 10 ft from the south end of the 130,000-gal pool. When the reactor is moved to the gate end of the pool, the gate can be lowered and thus the greater area of the pool can be blocked off and pumped dry, to permit repairs and adjustments and the exact placing of instruments and shielding samples while personnel are protected from radiation.

The reactor has a variety of potential uses, in addition to its principal role as an aid in the testing of shields. It enables students and other investigators to perform critical experiments, study neutron distribution and, within limits, study the effects on reactor operation of various patterns of arrangement of the fuel elements.

The reactor was pioneered and developed by scientists at Oak Ridge National Laboratory; E. P. Blizard and C. E. Clifford initiated the project for operating a radiation source under water; William M. Breazeale directed design which was done by personnel of Oak Ridge National Laboratory.

• Utah U. builds reactor

The University of Utah announced last week it would build a $50,000 nuclear reactor in an abandoned building on its Salt Lake City campus, on lines similar to that of the Oak Ridge development.

Development by Llyde B. Borst, professor of physics at the university, the new reactor will be essentially a sphere one foot in diameter, containing Uranium-235, the whole immersed in water within a concrete block 15 ft square and 10 ft high.

The reactor will be used especially for the study of mineral ores, and to produce radio-isotopes not currently available from Atomic Energy Commission sources.

Dr. Borst has had experience with nuclear problems. He was in charge of reactor development at Atomic Energy Commission's Brookhaven, Long Island, laboratory, from 1946 to 1951. He said one of the real uses of the new reactor will be to train engineering and physics students for posts with governmental agencies or with private industry when industry inaugurates the development of nuclear processes for general use.

The U-235 used as fuel for the reactor will be "borrowed" from Atomic Energy Commission, returnable to that agency in the event of emergency.

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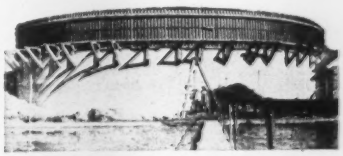

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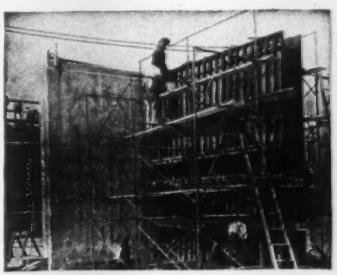

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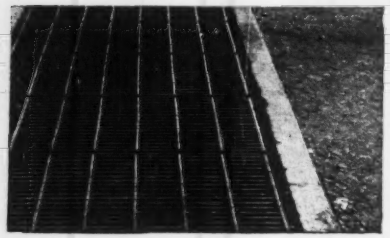

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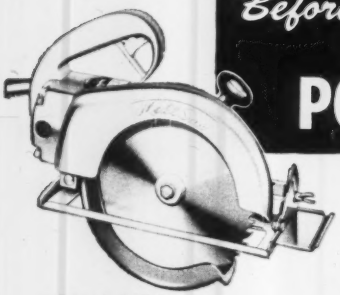

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Demonstration houses show new building ideas

New techniques for low-cost, small house construction will be demonstrated in the building of five houses by private builders under the direction of the University of Illinois and New York University. The projects are being carried out under research contracts with the Housing and Home Finance Agency.

The purpose is to demonstrate to builders new research developments in house planning and construction to make more efficient use of materials.

The houses will be built by the private builders at their own expense, and they can sell them when the houses have served their demonstration purposes, but the government will pay for working drawings, specifications and records.

New house planning techniques, new construction details and assembly methods, new materials, and new requirements in working drawings will be used in the demonstration houses. Accurate cost figures and visual records will be kept to afford a basis of comparison between old and new techniques, and visual records for purposes of instruction.

Work has started on the first of two houses at Urbana, Ill., under the direction of the Small Homes Council of the University of Illinois. Also, site clearing is under way for three houses to be built at Hartsdale, N. Y., under the direction of New York University.

The Hartsdale builder, Frank T. Tufaro, will use standard techniques in the first house; the second will be a "dry run" operation, using new techniques developed by the Small Homes Council of the University of Illinois and modified by New York University for use in metropolitan areas. Having learned these techniques, the builder will then construct a third house identical with the second.

In Illinois, the builder, is erecting one-story, three-bedroom, and basement houses, with about 1,000 sq ft of floor area. Each has a living area, a kitchen to include dining space, a heater room, indoor play space, a bathroom-laundry, and ample storage, also an enclosed garage. The plan is a simple rectangle, 30x34 ft.

Designed on the modular principle, the houses will be adaptable for open-room construction. The roof is supported on trusses spanning between exterior walls. Non load-bearing partitions will be tipped into place after the floor, ceiling and wall finish materials are applied.

OBITUARIES

Dudley T. Corning, 75, civil engineer and former chief of the old Philadelphia Bureau of Highways and Street Cleaning died June 17 at Philadelphia. He had been associated with the Philadelphia Department of Public Works for 34 years. He served as head of the highway bureau from 1928 until he retired in 1949. A graduate of Rensselaer Polytechnic Institute, he was former head of the city officials division of the American Road Builders Association. At one time he was chief engineer of the Cambria Steel Co. of Johnstown, Pa. From 1920 to 1925 he was the Coal Lands Evaluation Division of the U. S. Treasury Department. He went to Philadelphia in 1915 and soon became known as an outstanding administrator. He had charge of all the paving work and the development of the site for the Philadelphia Sesqui-Centennial exposition in 1926.

Harold P. Chapman, 59, Columbus, Ohio, a partner in Chapman and Bradley, engineering consultants, and chief engineer of the Ohio Highway Department from 1931 to 1935, died June 13. He had been with the State Highway Department since 1921.

Arthur V. Sheridan, 64, who planned to retire July 1 as Commissioner of Borough Works in the Bronx, N. Y. City, was killed in an automobile accident June 19. Mr. Sheridan attended City College, New York, and the Sorbonne, Paris. He edited several engineering journals and was an engineering professor at N. Y. University and Manhattan College. He was the author of a book, "Whither Engineering Education?" He had received Presidential commendations for engineering work he did for the government.

Philip H. Hintze, 67, former Dane County, Wis., surveyor for 28 years, died June 13 at Madison, Wis. A civil engineering graduate of the University of Wisconsin, Mr. Hintze was surveyor for the city of Stoughton, Wis., in recent years and was a former drainage engineer in that area.

Harry E. Brandon, 69, engineer with the Ontario Hydro-Electric Power Commission for 31 years, died June 11 in Toronto. He joined the commission in 1919 as structural engineer, retiring in 1950. He previously served as engineer with Manitoba Bridge and Iron Works and the Vulcan Iron Works.

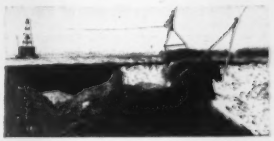
a SAUERMAN MACHINE CUTS COSTS TO ROCK BOTTOM

Picture shows a Sauerman drag scraper digging into a ridge of volcanic ash 250 ft. high and loading the ash into cars for use as track ballast.

More Yards • Less Labor • Larger Profits!

Where materials are to be moved distances of several hundred feet or more, a Sauerman Drag Scraper or Cableway can cut the cost per cubic yard to a low figure because it is able to dig, haul and place the material in a continuous, straight-line operation, doing away with the expense of rehandling. The operation is smooth and rapid, producing large yardage with moderate expenditure of power.

The first cost of a Sauerman machine is reasonable, maintenance amounts to very little, and the simplicity of operation makes it possible to place the control of even the largest installation in the hands of one operator. There is a size and type of Sauerman machine for every long range material handling job.



On job of stripping deep overburden from a deposit over 1,000 ft. wide, the Sauerman Crescent scraper bucket is provided with a carrier which runs on a cable suspended between two moving towers.

Above is Sauerman Slackline Cableway removing flood debris from spillway and dumping the debris on an adjacent hillside. Machine is used just a few months each year after spring floods and keeps spillway clean at small expense.

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532 SO. CLINTON ST. CHICAGO, ILLINOIS

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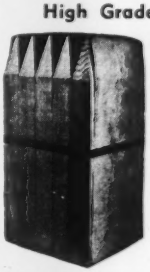
Stained Yellow Bound with Steel Strapping



	Per 100	In 1000 Lots Per 100
2x2—12"	$ 7.15	$ 6.50
—15"	8.80	8.00
—18"	9.60	8.70
—24"	11.50	10.45
—36"	16.50	15.05

GRADE STAKES

1x2—12"	5.60	5.10
—15"	5.75	5.20
—18"	5.80	5.25
—24"	6.90	6.25
—36"	9.70	8.80

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AN ADVERTISING INCH is measured ⅞ inch vertically on one column, 3 columns—30 inches —to a page. E.N.R.

NEW ADVERTISEMENTS Address New York Office, 330 W. 42nd St., N. Y. 36, for July 17th issue closing July 7th

CHIEF DESIGN ENGINEER

Capable of supervising structural, mechanical and electrical design of public utility and industrial power plants; gas compressor stations; industrial and municipal water supply and waste treatment installations; power and process piping. Must have supervised large staff of design engineers. General construction estimating experience desirable. Age 35 to 50, graduate C.E. or M.E. Work location Western Pennsylvania. Excellent salary, permanent position. All replies acknowledged and kept confidential. Send complete details of age, education and experience to

P-4559, ENGINEERING NEWS-RECORD,
330 West 42nd Street, New York 36, N. Y.

EARTH AUGER SALESMAN

Demonstrate and sell the well-known PENGO Earth Auger, and related products to utilities, telephone companies, contractors, state and federal government agencies, Eastern, Mid-West and Southern territories available on salary plus commission basis. Send full qualifications direct to Nels Nelson.

PETERSEN ENGINEERING Co.
Santa Clara California

A MAJOR OIL COMPANY

located in

SOUTH AMERICA

and affiliated with

STANDARD OIL COMPANY (NEW JERSEY)

needs

Engineers

Structural Designer

Must have engineering degree and several years professional experience. Chemical plant or oil refinery experience desirable. Will be required to draft, design, and check oil refinery installations.

Chief Civil Engineer

Engineering degree and several years responsible general engineering experience required. Will be in charge of engineering for all construction projects; including road layouts, building design, housing design, and pipe line and well location surveying. Will be required to write contract specifications, and coordinate construction projects executed by contractors.

These are regular staff positions offering liberal salaries and benefit plans.

Write giving complete address, age, marital status, education, and details of previous experience.

Box 308-A
Radio City Station
New York 19, N. Y.

PROJECT MANAGER — Job Runner — General Contractor Northern New Jersey. Permanent.

THE FERBER COMPANY
16 JOHNSON AVENUE, HACKENSACK, N. J.
Hubbard 7-1536

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County Superintendent of Highways
KNOX COUNTY
GALESBURG, ILLINOIS

Applicants may write to The State Aid Road Committee, Board of Supervisors, Knox County, 2262 Grand Avenue, Galesburg, Illinois, stating age, education, experience, marital status, and salary desired. All replys will be held in strict confidence.

Successful applicant must possess a Baccalaureate degree in engineering from a reputable school. Must have at least 10 years of practical experience in civil engineering and road building. Also, must have at least 2 years administration comparable to the position.

Appointment to be made in December 1952.

CORROSION ENGINEERS

Leading engineering and construction firm offers staff positions to corrosion engineers with minimum of three or four years experience in corrosion investigations and design of cathodic protection on pipe lines and lead cables in country and city networks. Must be graduate electrical engineer (or equivalent). Work involves extensive travel, with headquarters in New York City. Salary commensurate with experience and ability. Good opportunity for advancement.

P-4593, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

TEACHING POSITIONS in ISRAEL

The Hebrew Institute of Technology, Haifa, Israel, proposes to appoint 1 associate professor in surveying or geodesy; 1 associate professor in hydraulics; 1 senior lecturer in hydraulics; 2 senior lecturers in structural engineering.

Applicants should have first-rate professional and academic qualifications, be willing to integrate themselves into the life of the country and, in due course, to teach in Hebrew.

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80 FIFTH AVENUE
NEW YORK 11, NEW YORK

REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (36)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

DIRECTOR OF Public Works for Chartered California City of 8,700. Registered Civil Engineer, California. Full Details and Salary first letter. 40 hour men do not apply. P-4621, Engineering News-Record.

APPLICANTS WANTED—by the Connecticut State Personnel Department for Soils Engineer, starting salary $4620. Eight (8) years' employment in civil engineering including (3) years' employment in soil mechanics and foundation engineering work; or graduation from college in civil engineering with a Master of Science degree, majoring in soil mechanics and foundations, including not less than twenty (20) semester hours in courses in soils mechanics and foundation engineering and the three (3) years of the special experience required above. Residence for Connecticut waived. Closing date is June 30, 1952.

BRIDGE DESIGNERS. Experienced and inexperienced men with a civil engineering degree wanted for a period of about 24 months in the office of a well known organization in Central Pennsylvania. State qualifications, age, salary requirements and availability in first letter. P-4655, Engineering News-Record.

CIVIL ENGINEER on Dam Construction. Two year project in Houston, Texas, Area. San Jacinto Equipment Co. and Elmer C. Gardner, Inc., Sheldon, Texas.

ELECTRONIC ENGINEERS. 2 Project managers for Development in Micro wave and receiver field, capable of taking full responsibility for complete project. Starting salary $8,400 per year. 3 Juniors for Design, some experience, to train for project managers, salary $4,800 up. Send detailed resumes to Mr. Howard, The Cleveland Vocational Bureau, 200 Schofield Bldg., Cleveland 15, Ohio.

ENGINEER — ESTIMATOR. Experienced for Westchester County (N.Y.) contractor doing highways, sewers, paving, excavation & other public works. Present staff knows of this advertisement. Please submit qualifications, experience, salary, etc., for appointment. P-4518, Engineering News-Record.

GENERAL SUPERINTENDENT — Marine and Heavy Construction. Permanent position. Location Southern New England. P-3974, Engineering News-Record.

SEVERAL ENGINEERS in office of consultant on sanitary projects, experienced in this or related fields such as structural or hydraulic. Permanent positions intended. Full information, references and salary requirement requested. Location, Ohio. P-4497, Engineering News-Record.

(Continued on the opposite page)

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ARCHITECTURAL ENGINEERING
OUR COURSES of instruction by mail HAVE HELPED THOUSANDS to better positions and to pass State Board Examinations. Forty-first year. Write today.
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SEARCHLIGHT SECTION

This index is published as a convenience to the readers. Every care is taken to make it accurate but Searchlight Section assumes no responsibility for errors or omission.

Aberthaw Co., The 90, 94
Air Compressor & Pump Corp. 93
Albro Steel Co. 90
American Air Compressor Corp. 92
American Technion Society 86
Austin Bridge Co. 96
Bauer, L. W. 94
Bernard Pipe Line Co. 96
Bixby Inc., R. W. 87
Boyer, Inc., R. W. 90
Brenigan & Co., H. J. 97
Buff 97
Burnside, Frank R. 90
Carlyle Rubber Co., Inc. 93
Chemical Co. 96
Clemens Construction Co. 94
Commercial Metals Co. 95
Contractors International Supply Corp. 95
Contractors Machinery Co. 90
Dalton Supply Co. 94
Davis Construction Co. 95
Deatherage & Son George E. 87
Drachman Steel Corp. Hy. 95
Ehbar Inc., Edward 91
Fabick Tractor Co., John 91
Ferber Co., The 86
Forsythe Equipment Co. 92
Foster Co., J. M. 96
Foster Co., L. B. 96
Frank, M. K. 95
Frazier-Davis Construction Co. 92
Goodman, Al. J. 90, 91, 93, 96
Greensburg Machine Co. 90
Greenpoint Iron & Pipe Co. 97
Groves Sons, S. J. 93, 94
Gurley, W. & L. E. 97
Hickerson, Roy D. 97
Hunter, Claude I. 97
Hodge & Hammond, Inc. 90
Jones Construction Co., J. A. 95
Kalil Co. 97
Kaufman Construction Co., Inc. 94
Knox County Highway Dept. 86
Langhoff, J. W. 96
Larssen Piling Corp. 96
Luria Brothers & Co., Inc. 91
Marhoefer, Jr., Co., E. H. 94
Martin, L. S. 95
McCarrick Brothers, Inc. 92
Meagher & Sons, Inc., W. J. 96
Mertes Machinery Co. 92
Midwest Steel Corp. 95
Mississippi Valley Equipment Co. 90, 92, 96
Morrison Railway & Supply Co. 95
National Blue Print Co. 97
Normac Inc. 96
Orban Co., Inc. 93
Payne-Oliver Concrete Co., Inc. 92
Petersen Engineering Co. 86
Quist Contracting Corp. 94
Schoonmaker Co., Inc., A. G. 90
Shannon & Co., J. Jacob 96
Sherman Transfer Co., Roger 92
Shirley, H. C. 94
Smith, Inc., L. B. 88, 89
Southworth Tractor & Machinery Co., Inc. T. 93
Stanhope, Inc., R. C. 96
Stone the Crane Man 91
Swabb Equipment Co., Inc., Frank 93
Tagco, Inc. 97
United Tractor & Equipment Corp. 90
Vulcan Iron Works 91
Walsh Co., Richard P. 90
Warren-Knight Co. 97
Weiss Co., B. M. 90
Wellsworth Trading Co. 96
White Co., David 97
Williams Construction Co. 96
Wilson Engineering Corp. 87
Wing & Son, R. B. 94

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Responsible positions open as field representatives for major manufacturer of earthmoving equipment. Will serve in Continental U. S. Knowledge of time study . . . equipment performance . . . and earthmoving techniques essential. Civil engineer graduate preferred. Send for particulars of experience and education to

P-4680, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

SALARIED POSITIONS $3,500—$35,000
We offer the original personal employment service (established 42 years.) Procedure of highest ethical standards is individualized to your personal requirements. Identity covered: present position protected. Ask for particulars.
R. W. BIXBY, Inc., 272 Dun Bldg., Buffalo 2, N. Y.

POSITIONS VACANT

(Continued from opposite page)

STRUCTURAL STEEL Detail Draftsmen and Checkers. All Types of Structures. Vacation and bonus plan, group insurance, good working conditions. Only top quality men. Send complete written information. Samborn, Steketee and Associates, 1214 Cherry St., Toledo 4, Ohio.

WANTED: INSTRUCTOR of engineering drawing and descriptive goemetry. Salary $4,000 for 9 months. Assistant professorship for qualified applicant. M.E. graduate preferred. Dept. of Engr. Drwg., University of North Dakota, Grand Forks, N. Dak.

WANTED—MALE—Structural Steel Detailer—Experienced—1st Class—Permanent position—Excellent Opportunity for Right Party. The New England Iron Works, Inc., P.O. Box 955, New Haven, Connecticut.

EMPLOYMENT SERVICE

SALARIED PERSONNEL $3,000-$25,000. This confidential service, established 1920, is geared to needs of high grade men who seek a change of connection under conditions assuring, if employed, full protection to present position. Send name and address only for details. Personal consultation invited. Jira Thayer Jennings, Dept. L, 241 Orange St., New Haven, Conn.

POSITIONS WANTED

ARCHITECT-ENGINEER 15 years industrial, institutional, and overseas defense experience. Free to travel, available soon, best references. PW-4685, Engineering News-Record.

CIVIL ENGINEER, Graduate, Registered. Desires responsible supervisory job where 25 yrs. broad experience with a major oil co. in Structural, Mechanical, Architectural work on buildings & all types of structures can be used. Salary $12,000. PW-4650, Engineering News-Record.

CIVIL SANITARY Engineer: M.A.S.C.E.; C.E.; M.C.E.; M.S. in P.H.E. Registered in three states. Twenty-five years construction, engineering, engineering teaching and administrative experience. PW-4464, Engineering News-Record.

Equipment Wanted Advertising—page 96

POSITIONS WANTED

CONSTRUCTION MANAGER or Projects Manager available August 1st. Over 25 years diversified experience as construction Manager, Projects Manager and General Superintendent on foreign and domestic work. Outstanding record on reorganizations of delayed projects and in over-all management, supervising all departments. Highest references. PW-4653, Engineering News-Record.

ENGINEER, 22 YEARS' experience in Construction Tools and Equipment. Testing Apparatus; Materials Consultant; seeks connection with growing concern capable utilizing combined technical background and overseas contracts. PW-4659, Engineering News-Record.

ENGINEER—STRUCTURAL Steel and Reinforced Concrete Design, Drafting, or Detailing. Prefer New York part time or New Jersey full time if convenient location. PW-4641, Engineering News-Record.

CONSTRUCTION AND Civil Engineer. Registered, 38 yrs. age, 17 yrs. experience. Just completed foreign contact and available Aug. 1st. Desire further foreign work. Competent designer in addition to field work. Will furnish references and additional information. PW-4642, Engineering News-Record.

ESTIMATOR GRADUATE Architectural Engineer age 27, now employed, three years experience takeoff, pricing, purchasing, expediting, commercial and institutional work. Desires position combining office and field work. Prefer Mid-West location. PW-4683, Engineering News-Record.

EXECUTIVE CONSTRUCTION Engineer, long experience, estimates and supervision heavy construction including foundations, dams, docks, tunnels, especially difficult subaqueous structures. PW-3497, Engineering News-Record.

GENERAL EXECUTIVE Construction Supt. 46, available immediately. Sober and reliable, Civil Engineer. Location Ga., Fla., West Indies. 25 years experience all types of heavy construction. Excellent supervisory record of field and office work. PW-4582, Engineering News-Record.

HEAVY CONSTRUCTION Superintendent, extensive experience on rock blasting, earth moving and concrete. Available July 15th. PW-4452, Engineering News-Record.

MAINTENANCE AND schedule Engineer—6 years experience in petroleum refinery; 2 years Sanitary Engineering design. Available after July 1. PW-4526, Engineering News-Record.

MASTER MECHANIC, equipment superintendent or mechanical supervisor, age 44, twenty years thorough experience in heavy earth moving, bridge and industrial Projects, experienced in all phases of shop management, capable organizer and producer, location immaterial. PW-4597, Engineering News-Record.

CIVIL ENGINEER: Reg. P.E. N.Y. Available for executive-supervisory position. Forty years engineer-construction background. Recent responsible foreign assignments include Latin America and Far East. Airports major defense, drainage, grade design and housing development projects. Fluent Spanish. Reliable, active and in excellent health. Age 64. PW-4579, Engineering News-Record.

SURVEYOR-COMPUTOR 25 years exp. office & field. Constr. Topo., & sub-divisions. Accurate, rapid all around computor. PW-4679, Engineering News-Record.

PROJECT ENGINEER, P. Eng., 38, single, Canadian. 10 years varied experience field and office on large projects. Experience includes: railroad, highway and airport construction; pulpmill construction; small wood frame, concrete and steel buildings; installation of all types of services; structural design, estimating, scheduling; field and location surveys; construction supervision. Now employed as owners' engineer on multi-million dollar project. Available for any challenging assignment after Oct. 1. Domestic or foreign. PW-4667, Engineering News-Record.

PART TIME WORK WANTED

HYDRAULIC AND Sanitary engineer desires work at home. Sewage, Sewerage, Water-Supply, Hydro-Electric. PTWW-4681, Engineering News-Record.

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INDUSTRIAL PLANTS
Will arrange thru purchase of (1) Capital stock, (2) Assets, (3) Machinery and equipment, whole or in part—Personnel usually retained, strict confidence. Box 1351 Church St. Sta., New York 8, N. Y.

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L. B. SMITH INC.

New and Used Equipment News

Prepared Monthly by Ed Woolford at Camp Hill, Pa.

VOL. 1 NO. 4

AIR COMPRESSORS

Gardner-Denver 500 cu. ft. diesel, new condition.
Ingersoll-Rand 105 cubic foot, Waukesha gasoline power, on two rubber tires.
Schramm 105 cubic foot gas powered compressor on 4 steel wheels.
Pennsylvania 12" x 10" class 3A single cylinder, 355 cubic foot P.D., flat belt driven 50 HP slip ring motor.
Worthington two-stage, water-cooled, vertical 250#. 60 CFM, new condition.
Paving breakers, jackhammers, wagon drills, tie tampers.

QUARRY EQUIPMENT & BINS

4024 Cedarapids roll, rebuilt.
3018 Cedarapids roll, rebuilt.
Cedarapids Rock-It plant with 2025 jaw, 3033 mill. New.
Cedarapids 1236 Model 6C plant, new.
4033 Cedarapids Hammermill, rebuilt.
1030 Good Roads. Reconditioned.
10x7 Allis-Chalmers Blake type jaw crusher.
#1 Cedarapids Kubit impact breaker.
4' x 6' Kennedy Van Saun single deck.
3' x 6' Kennedy Van Saun triple deck.
15 cu. yd. Cedarapids sand drag, new.
16" x 90' bucket elevator.
60-ton, 2-compartment, 8'x18' storage bin with clamshell gates.
100-ton, 2-compartment, 13'x23' storage bin with clamshell gates.
Special bins to your specifications.
Conveyors—18"—24"—30"—36". Also belt.

TRUCKS—TRAILERS

1½-ton Ford with any body.
2½-ton GMC, rebuilt.
2000-gallon tanks on semi-trailer mounting.
New and rebuilt dump bodies.

GENERATORS & LIGHT PLANTS

1½ KW to 125 KW, alternating and direct current gasoline and diesel powered.

SHOVELS—CRANES

Lorain L-50, 1-yd. diesel. New condition.
Brownhoist 1-yd. gas shovel & crane.
Link-Belt LS50 gas ½-yd. shovel & hoe.
P&H Model 150, ½-yd. crane.

SHOVEL & CRANE ATTACHMENTS

Lorain TL-20 shovel attachment.
Lorain L-41 Chain Crowd Shovel Attachment. Rebuilt.
Lorain 40 Hi-Lift shovel attachment.
P&H 203 shovel attachment.
Chain crowd Lorain 30A shovel attachment.
Bucyrus-Erie 1½-yd. rock bucket.
McCaffrey Model 648 for 1¼ to 2-yd. crane.
McCaffrey Model 636 for ¾-yd. to 1-yd. crane.

Backhoe Buckets & Attachments

Lorain TL-25 hoe attachment, new.
Lorain 30 hoe attachment complete.
¾-yd. Lorain, 40, LBS #8105. 44" cutting width.
26" outside width solid bottom type LBS #4377, good condition.
¾-yd. Amsco 40" cutting width, LBS #8101.

CLAM—DRAG—SCRAPER BUCKETS

LIFTING MAGNETS

2—45" Ohio lifting magnets, rebuilt.
1—36" ECM lifting magnet, rebuilt.

SHOVEL DIPPERS

Lorain 41, ¾-yd. LBS #8600, rebuilt.
New Lima 1-yd. Amsco, LBS #2295.
Bucyrus-Erie 1¼-yd. gas air, LBS #3782, fair.
Lorain 75B, 1½-yd. manganese bucket, LBS #8538.
Lorain 75B, 1¼-yd. extended lip, 1¾-yd. LBS #2260.
Pettibone-Mulliken 2-yd. Lorain 82 or 820, manganese, LBS #5361.
Pettibone-Mulliken 2-yd. for 3500 Manitowoc LBS #5763.
Esco 2½-yd. cast weld dipper with bail & teeth.

CONCRETE ROAD BUILDING & MISCELLANEOUS CONCRETE HANDLING EQUIPMENT

Concrete Equipment

Blaw-Knox gas-electric finisher, 10½'-12½', rebuilt.
2 Koehring 10'-12' finishers, rebuilt.
1220'—Heltzel 9"x8" road forms with stakes.
Cleveland formgrader, new 1944, rebuilt.
Corr formgrader, new 1944, rebuilt.

TRACTORS

1—Ford Dearborn rubber tired with hyd. front end loader and hoe attachment.
1—TD9 International diesel with 1 yd. Loadover.

WELL DRILLS & TOOLS

Sanderson-Cyclone #42 well drill, new.
Sanderson-Cyclone #44 well drill, new.
Bits—Stems—Bailers—Sockets—Etc.

PUMPS

New Layne Bowler type 18 deep well pump with right angle gear drive. 3000 GPM at 120' TDH.
Used and rebuilt pumps, all sizes, gasoline, electric or diesel.

GRADERS

Austin Western 77 tandem drive, scarifier, 12' blade, gas power, hydraulic controls.

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Buda, Hercules, Hill diesels, rebuilt.
New and rebuilt Murphy diesels, ME-4 & 48.
GM 6 and 12 cylinder diesels, practically new.

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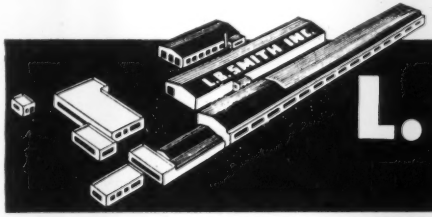

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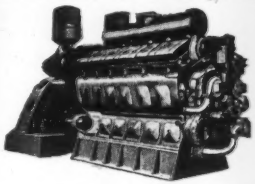

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KW	Make	Model	HP	RPM	KW	Make	Model	HP	RPM
1136	Fairbanks Morse	38D	1600	720	320	Enterprise	DSG-6	560	450
1100	General Motors	16-278A	1600	720	300	General Motors	8-268A	450	1200
750	General Motors	12-567	1080	720	200	General Motors	8-268A	350	900
500	General Motors	8-278A	750	720	100	General Motors	3-268A	150	1200
500	General Motors	8-567	720	720	100	Worthington	BB-5	150	600
350	Baldwin	VO-6	510	450	60	General Motors	6-71	90	1200
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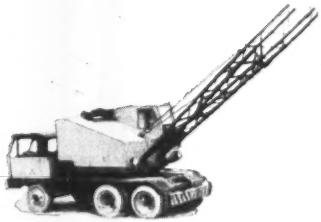

Actual Photo

CRANES

1—Lorain L-820 Crawler Combination Crane, with shovel front and 2 cu. yd. bucket, Pettibone-Milliken 2 cu. yd. dragline—Ser. 18648. Lighting plant. 30 Ton cap. and misc. equip. Powered by Waukesha 6WAKD Diesel. Excellent Condition.

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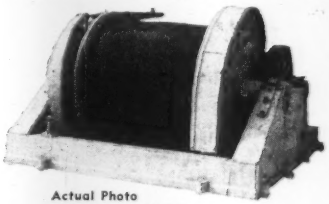
11'5" to top of arch 10' across uprights. ⅜" x 10" x 10" foot plates. Drilled for tie rods; 6" 20# H column wt. 648# each arch. Virtually new, suitable for mines, tunnels, shoring, reinforcing for structural purpose. Detailed drawing and price on application.



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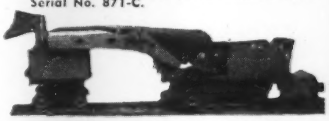
HOISTS

1—Hoist, Ottumwa. Serial No. 4063, 48" dia. x 48' 5½" shaft, Rope speed 470.5 RPM—grooved for 1" wire rope. Westinghouse Reversing Drum Controller—Type R28V, Serial 405377 G.E. CR-9516 Thruster Brake, with Westinghouse Induction Constant Speed, Type CW, Style LA-4029, 440 volts, 200 H.P., 1750 RPM. 3 ph. 60 cycle, 209 amps. per ring 431 amps. between rings. Serial No. 871-C.



Actual Photo of Eimco Model 40 Mucker

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6—Muckers, Eimco Rocker Shovel, Model 40 equipped with Ingersoll-Rand EE 5 UP and KK5D Air Motors for 36" ga. track and pony att. for tramming on 24" track: equip. with horiz. and vert. swing adjust on conveyor. Serial Nos.: 40057, 40058, 40063, 40066 and 40067.

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16"	4	1/8"	1/32"	28 Oz.
18"	4	1/8"	1/32"	28 Oz.
20"	4	1/8"	1/32"	28 Oz.
20"	5	1/8"	1/32"	28 Oz.
24"	4	1/8"	1/32"	28 Oz.
24"	5	1/8"	1/32"	28 Oz.
26"	5	1/8"	1/32"	28 Oz.
30"	4	1/8"	1/16"	32 Oz.
30"	5	1/8"	1/16"	32 Oz.
30"	6	1/8"	1/16"	32 Oz.
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(make an offer on drier, dust collector, & mixer)

1—4 x 12 two-deck vibrating Pioneer screen 2,250.00

1—4 x 12 two-deck vibrating Tyler screen 1,500.00

1—10-ton Buffalo-Springfield roller, 3-wheel 2,000.00

1—Grace asphalt booster 1,750.00

5—15 cu. yd. St. Paul dump bodies 600.00 each, as is

2—24 x 16 Pioneer roll crushers 3,400.00 each

3—4 cylinder air cooled Wisconsin motors 200.00 each

6—5 KW International light plants 750.00 each

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1—2 cu. yd. clam bucket 1,750.00

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1—Warco Model 4D-76 Motor Grader

1—American Model 6H Motor Grader

1—Huber Maintainer

1—M-M Tractor Model RT1 with Lull Loader

USED EQUIPMENT—

1—2½ ton Littleford Roller

1—A-C Patrol Grader with Loader

1—A-C Highway Patrol Grader

1—Haiss Bucket Loader on cats

1—10 ton Hercules 3 wheel Roller

1—Ford Tractor with Loader

1—HD7-AC Bulldozer w. 4 yd. Letourneau Scraper

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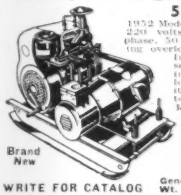

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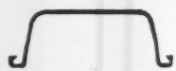

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30 ton Derrick 65'0" Oregon Pine Mast, steel boom, bull wheel, steel guys, sheaves and steel rope.
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2 Marble saw gangs complete.
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GREENPOINT IRON & PIPE CO. INC
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OFFICIAL PROPOSALS

Bids: July 10, 1952

Canal Improvement

CANAL IMPROVEMENT
STATE OF NEW JERSEY
DEPARTMENT OF CONSERVATION
AND ECONOMIC DEVELOPMENT
DIVISION OF WATER POLICY AND SUPPLY

Sealed proposals for the construction of the "Lambertville Control Structures" on the Delaware and Raritan Canal Feeder in the City of Lambertville, Hunterdon County, New Jersey, will be received by the Division of Water Policy and Supply at its office, Room 307, 520 East State Street, Trenton, N. J., until 2 P.M. (E.D.S.T.), Wednesday, July 16, 1952, at which time and place the bids will be publicly opened and read.

The work includes the construction of a new reinforced concrete gate structure and wing walls; new gate structure in the existing bypass channel; excavation of the main approach channel; installation of gates; repair of masonry in the rock chamber; miscellaneous work, and restoring the site. Approximate quantities involved are: Foundation excavation 330 cu. yds.; rock excavation 10 cu. yds.; channel excavation 6000 cu. yds.; concrete (Class D) 100 cu. yds.; concrete (Class B) 210 cu. yds.; reinforcing steel 10,400 lbs.; riprap slope protection 250 sq. yds.; installation of 5 sluice gates; alternate, Pneumatically applied mortar 4800 sq. ft.

Drawings, specifications, form of bid, contract and bond for the proposed work will be on file at the Canal Office of the Division, 342 Academy Street, Trenton, N. J., and may be inspected by prospective bidders during regular office hours. Plans will be furnished on the deposit of $10 for each set on application to the Canal Office.

Bids must be made on standard proposal forms and must be submitted in sealed envelope bearing the name and address of the bidder on the outside, marked "Proposal for Lambertville Control Structures", and must be accompanied by a certified check drawn to the order of the Treasurer of the Treasurer of the State of New Jersey in the amount of ten percent of the bid submitted, and must be delivered at the above place on or before the time stated. Copies of standard proposal forms will be furnished on application. Prequalification of bidders will be required. The right is reserved to reject any or all bids. BY ORDER OF THE WATER POLICY AND SUPPLY COUNCIL, John Wyack, Secretary.

Bids: July 10, 1952

Route 46 (1953), Section 1

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:

ROUTE 46 (1953), SECTION 1
Construction of Route 46 (1953), Section 1, from Dunnfield to Columbia, Grading, in Pahaquarry and Knowlton Townships, Warren County, Federal Project No. FI-95(1). Length 3.426 miles. The principal items of construction are:

Roadway Items

Estimated:
546,717 cu. yds. Roadway Excavation—Earth
53,346 cu. yds. Roadway Excavation—Rock
25,062 cu. yds. Roadway Excavation—Unclassified
25,000 cu. yds. Rock Rip-Rap Slope Protection
10,590 lin. ft. Rein. Conc. Culvert Pipe
103 Inlets
6,000 cu. yds. Rock Slide Barrier
12,983 cu. yds. Borrow Excavation

Bridge Items

7,777 cu. yds. Concrete in Structures
164,630 lbs. Reinforcement Steel in Structures

Bids for the above will be received at the office of the State Highway Department, Assembly Room, Room 140, in the State Highway Office Building, 1035 Parkway Avenue, Trenton, New Jersey, on Thursday, July 10, 1952, at ten o'clock (10:00 A.M.—EASTERN STANDARD TIME), eleven o'clock (11:00 A.M.—DAYLIGHT SAVING TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plant and equipment with their bid.

NOTE: The proposed project is a "Federal Air Project" authorized by the provisions of Title 27, of the Revised Statutes of New Jersey and supplements and by P. L. 769, 81st Congress, and is to be performed in accordance with the special provisions and requirements of the Bureau of Public Roads, Department of Commerce, as outlined in the specifications, which provisions require that labor be employed from lists furnished by the State Employment Service, Municipal Building, South Main Street, Phillipsburg, N. J. The attention of bidders is directed to the special provisions covering subletting or assigning the contract. The minimum wage paid to all common labor employed on this contract shall be $.75 per hour. The minimum wage paid to all intermediate grade of labor employed on this contract shall be $1.00 per hour. The minimum wage paid to all skilled labor employed on this contract shall be $1.50 per hour.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, N. J., and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 139, State Highway Office Building, 1035 Parkway Avenue, Trenton, N. J. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: R. J. Abbott
State Highway Commissioner

Bids: July 7, 1952

Construction of a Drain in Porter and Willow Streets

NOTICE TO CONTRACTORS
NORTH ADAMS, MASSACHUSETTS

Sealed bids for constructing a reinforced concrete drain will be received at the office of the Commissioner of Public Works, City Hall, North Adams, Massachusetts, until 2:00 p.m. Eastern Daylight Saving Time on July 7, 1952 and at that time and place will be publicly opened and read.

The work includes about 670 ft. of 60-in. diameter drain with manholes and appurtenances.

Drawings and documents may be obtained at the above office or at the office of Metcalf & Eddy, Statler Building, Boston, Massachusetts, $10 deposit.

Bid security, a certified check for $7,000 made payable to the Treasurer of the city of North Adams, Mass., must be submitted with each bid. Successful bidder must furnish 100% performance bond.

Minimum wage rates and Public Work conditions of employment applicable.

The right is reserved to reject any or all proposals or to accept the one deemed most advantageous for the city of North Adams.

HENRY A. GALIPEAU,
COMMISSIONER OF PUBLIC WORKS
NORTH ADAMS, MASSACHUSETTS

Bids: July 22, 1952

Traveling Cranes

CONTRACT 410

SEALED BIDS will be received by the Board of Water Supply, at its offices, thirteenth floor, 120 Wall Street, New York City, until 10:00 A.M., Eastern Standard Time, on Tuesday, July 22, 1952, for Contract 410, for furnishing, testing and delivering 15-ton and 3-ton electric traveling cranes and appurtenances for installation in the Neversink and East Delaware intake chambers and the Downsville release water chamber of the Delaware system, all as set forth in the specifications.

No bid will be received and deposited unless accompanied by a certified check upon a National or State bank, drawn and made payable to the order of the Comptroller of the City of New York, in the amount of fifteen thousand dollars ($15,000.00), for the proper execution of the contract.

At the above place and time the bids will be publicly opened and read. Pamphlets containing information for bidders, forms of bid and contract, specifications, contract drawings, requirements as to surety, etc., can be obtained in Room 1311, at the above address, upon application in person or by mail, by depositing the sum of five dollars ($5.00) in cash or its equivalent for each pamphlet. Within 30 days following the award of contract or rejection of bids, the full amount of such deposit will be refunded for each pamphlet submitted as a bid and a refund of four dollars ($4.00) will be made for each other pamphlet returned in acceptable condition. For further particulars, apply at the office of the Chief Engineer at the above address.

IRVING T. A. HUIE, President, RUFUS E. McGAHEN, EDWARD C. MAGUIRE, Commissioners, Board of Water Supply; RICHARD H. BURKE, Secretary.

Bids: July 10, 1952

STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of Highway Law, sealed proposals will be received until 10:30 A.M., Eastern Daylight Saving Time, on July 10, 1952 by Henry A. Cohen, Director, Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y. for

SOIL EXPLORATIONS AND FOUNDATION INVESTIGATIONS AT VARIOUS SITES ON THE NEW YORK STATE THRUWAY, HUDSON SECTION, SUBDIVISION 5, SUFFERN TO ROUTE 303, ROCKLAND COUNTY, WHICH CONSTITUTES CONTRACT NO. SPEC. SM-38.

Maps, plans and specifications may be examined and obtained at the following offices:

(a) Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany 1, N. Y.
(b) J. S. Bixby, District Engineer, Pleasant Valley Road, Poughkeepsie, N. Y.
(c) Charles Schaefer, Department of Public Works, 270 Broadway, New York City.

The deposit for a set of plans, specifications and proposal forms is $5.00. A refund in full will be made to bidders for return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

The Engineer's estimate of cost for this work is $56,250.00.

Proposal for this contract must be submitted in a separate sealed envelope with the name of the contract plainly endorsed on the outside of the envelope. Proposal must be accompanied by draft or certified check, payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum of $2,813.00. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instruction to Bidders".

The right is reserved to reject any or all bids.

B. D. TALLAMY
Superintendent of Public Works

OFFICIAL PROPOSALS

Bids: July 10, 1952

N. Y. State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, Albany, N. Y.—Pursuant to the provisions of the Highway Law, and Article 2, Title 9 of the Public Authorities Law, and special provisions for projects financed with federal aid funds, sealed proposals will be received until ten-thirty o'clock A.M., advanced standard time, which is nine-thirty o'clock A.M., eastern standard time on July 10, 1952, by Henry A. Cohen, Director, Bureau of Contracts & Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects: Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts & Accounts, Albany, N. Y., and at the office of the District Engineers noted below, and may also be seen at the office of the state Department of Public Works, 270 Broadway, New York City.

The deposit for plans and proposal forms for each contract is indicated below. A refund will be made in full to bidders for the return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
		DISTRICT No. 1				
		G. L. NICKERSON, Dist. Engr., 353 Broadway, Albany, N. Y.				
Albany	C.T.52-2P	New York State Thruway	(1.53	9" Cem. Conc. Pavt.	$165,000	$3,020,000
	C.T.C52-2P	Catskill Section,	Cross	2 at 25° Wide = 4.65 mi.	Plans $100	
	R.C.52-73	Subdivision 1-3	Roads)	(9" Cem. Conc. Pavt.		
	S.T.52-14	Slingerlands-Albany,	4.65	52'-44' Wide = 0.45 Mi.		
	S.T.C52-15	S.H.5237		Cross Roads)		
		Albany-Guilderland,		(Asp. Conc. Ty. 1A, Opt.		
		S.H. 5155		= 1.08 Mi. Cross Rds.)		
		City of Albany: Delaware		6 Hy. Sep. Alpha I-Beams		
		Ave. & Krumkill Rd.,		279.15'; 274.7'; 48.64';		
		Russell Rd., & Schoolhouse		256.56'; 243.6'; & 285.67'		
		Rd., C.R. 204		(Incidental Sewers &		
				Detour Work)		
		DISTRICT No. 2				
		LACY KETCHUM, Dist. Engr., 109 No. Genesee St., Utica, New York				
Hamilton	FARC52-70	Nobleboro-Morehouseville	3.24	Asp. Conc. Ty. 1A, Opt.	$10,000	191,000
		S.H. 874, Proj. F-455 (3)			Plans $10	
Oneida	FARC52-64	Augusta Rd., Lowell &	4.52	Asp. Conc. Ty. 1A, Opt.	$14,000	274,000
		Spencer Sections, SH438			Plans $10	
		Proj. S173(2)				
		DISTRICT No. 3				
		WILLIAM ROBINSON, Dist. Engr., 301 East Water Street, Syracuse, N. Y.				
Wayne	FASS52-11	South Butler-Conquest, Pt. 1	3.24	Bit. Mac. Opt.	$10,000	186,000
		(Co. Rd.)			Plans $10	
		Proj. S285(1)				
Cayuga & Onondaga	FARC52-67	Auburn-Skaneateles, Pts. 1&2, S.H. 9037	10.95	Asp. Conc. Ty. 1A, Opt.	$51,000 Plans $25	949,500
		Skaneateles Vill.: Genesee St.; Skaneateles-Lafayette, Pt. 1, S.H. 8356				
		Skaneateles-Lafayette, Pt. 2, S.H. 8360				
		Marietta-Marcellus, S.H. 971				
		Proj. F470(15) (Cont. No. 1)				
Onondaga	FARC52-68	Marietta-Marcellus, S.H. 971	11.21	Asp. Conc. Ty. 1A, Opt.	$55,000	1,015,800
		Skaneateles-Lafayette, Pts. 2&3, S.H. 8360-8373			Plans $25	
		Proj. F470(15) (Cont. No. 2)				
		DISTRICT No. 5				
		C. R. WATERS, Dist. Engr., 65 Court Street, Buffalo, N. Y.				
Chautauqua	FARC52-61	Cassadaga-Fredonia, S.H. 938	1.22	Asp. Conc. Ty. 1A, Opt. =	$10,000	189,000
		Fredonia Village, S.H. 1062		1.18 Mi.	Plans $10	
		Proj. F426(3)		Misc. Work = 0.04 Mi.		
Erie.....	FAC52-6	City of Buffalo: Delaware Ave.	1.63	Traffic Signal	$3,000	54,000
		Proj. U1078(2)		System	Plans $10	
		DISTRICT No. 6				
		H. F. Brumm, Dist. Engr., 38 West Main Street, Hornell, N. Y.				
Allegany	FARC52-65	Belfast-Transit Bridge,	3.97	Asp. Conc. Ty. 1A, Opt.	$13,000	234,000
		S.H. 1259			Plans $10	
		Proj. F465(5)				
Allegany...	FARC52-66	Belfast-Caneadea, S.H. 5615	7.28	8" Cem. Conc. Pavt.	$75,000	1,325,000
		Proj. F465(4); F380(6)		Var. Width. = 6.83 Mi.	Plans $25	
				Asp. Conc. Ty. 1A, Opt. =		
				0.44 Mi.		
				Misc. Work = 0.01 Mi.		
				Twin Conc. Box		
				Br. 14' x 7'		
		DISTRICT No. 8				
		J. S. BIXBY, Dist. Engr., Pleasant Valley Rd., Poughkeepsie, N. Y.				
Dutchess	FARC52-43	Manchester Bridge-Billings,	5.21	Asp. Conc. Ty. 1A, Opt.	$10,000	181,000
		S.H. 8364				
		Manchester Bridge-Billings,			Plans $10	
		Pt. 1, SH9298				
		Proj. F521(4)				
		DISTRICT No. 9				
		F. W. DONOVAN, Dist. Engr., 71 Frederick St., Binghamton, N. Y.				
Broome	FARC52-69	Castle Creek, S.H. 267	5.63	Asp. Conc. Ty. 1A, Opt.	$11,000	202,000
		Proj. F717(2)			Plans $10	
Sullivan	FASS52-5	Livingston Manor-Youngsville,	4.50	Bit. Treat. Stone =	$35,000	642,000
		Pt. 2 Proj. S317(1)		4.48 Mi.	Plans $25	
				Misc. Work = 0.02 Mi.		
				3 I-Beam Bridges		
				42.4', 50' & 50'		
		DISTRICT No. 10				
		J. J. DARCY, Dist. Engr., Little E. Neck Rd. & Sunrise Hwy., Babylon, L. I., N. Y.				
Suffolk	SMSP52-1	Sunken Meadow Spur Parkway	3.66	Grading & Drainage	$57,000	956,000
		(Cont. No. 1)		Incl. Detour &	Plans $25	
				Marg. Rds.)		

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to the "Controlled Materials Plan" of the National Production Authority as well as to regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instructions to Bidders".

When optional types are permitted on contracts with federal funds, bidders must state in the space provided in the proposal the exact designation of the optional type upon which the proposal is predicated.

The right is reserved to reject any or all bids.

B. D. TALLAMY
Supt. of Public Works

OFFICIAL PROPOSALS

Bids: July 16, 1952

Constructing Sanitary Sewers

CITY OF BALTIMORE
DEPARTMENT OF PUBLIC WORKS
BUREAU OF SEWERS
NOTICE OF LETTING

Sealed bids or proposals in duplicate, addressed to the Board of Estimates of the Mayor and City Council of Baltimore, and marked "Bid for Constructing and Completing Sanitary Sewers and other work in Baltimore City, Maryland", as embraced in Sanitary Contract No. 400, will be received at the office of the Comptroller, Room 204 City Hall, Baltimore, Maryland, until, but not after, Wednesday, July 16, 1952, at eleven o'clock A.M. (positively no bids will be received after 11:00 o'clock A.M.), Eastern Daylight Saving Time, and at twelve o'clock Noon, on said date they will be publicly opened and read by the Board of Estimates in Room 231 in said City Hall.

The approximate quantities involved are as follows:

Schedule "A"

7,290 Lin. Ft. Excavation for 30" to 42" Monolithic Concrete Sewer in tunnel.
685 Lin. Ft. Excavation for 36" Monolithic Concrete Sewer in open trench
85 Lin. Ft. Excavation for 12" Vitrified Pipe Sewer in tunnel
75 Lin. Ft. Excavation for 8" to 10" Vitrified Pipe Sewer in open trench
155 Lin. Ft. Furnish and Lay 8" to 12" Vitrified Pipe Sewer
350 Lin. Ft. Manholes
2,600 Cu. Yds. Class "A" Concrete Masonry
2,800 Cu. Yds. Class "B" Concrete Masonry
21,000 Lbs. Reinforcing Steel
38,300 Sq. Ft. Vitrified Clay Liner Plates
6,300 Lin. Ft. Furnishing and Driving Piles, etc.
Other Miscellaneous Items

Schedule "B"

7,290 Lin. Ft. Excavation for 30" to 42" Reinforced Concrete Culvert Pipe, one-half (½) vitrified clay liner plate lined sewer, in tunnel.
685 Lin. Ft. Excavation for 36" Reinforced Concrete Culvert Pipe, one-half (½) vitrified clay liner plate lined sewer in open trench.
85 Lin. Ft. Excavation for 12" Vitrified Pipe Sewer in tunnel.
75 Lin. Ft. Excavation for 8" to 10" Vitrified Pipe Sewer in open trench.
7,750 Lin. Ft. Furnish and lay 30" to 42" Reinforced Concrete Culvert pipe, one-half (½) vitrified clay liner plate lined sewer.
155 Lin. Ft. Furnish and lay 8" to 12" vitrified pipe sewer.
350 Lin. Ft. Manhole
150 Cu. Yds. Class "A" Concrete Masonry
4,310 Cu. Yds. Class "B" Concrete Masonry
21,000 Lbs. Reinforcing Steel
6,300 Lin. Ft. Furnishing and Driving Piles, etc.
Other Miscellaneous Items

Plans, specifications, and other contract documents may be obtained at the office of the Sewerage Engineer, 312 Municipal Building, Baltimore, Maryland, upon payment of Five Dollars ($5.00) for each copy, which amount will not be refunded.

A certified check of the bidder drawn on a solvent clearing house bank made payable to the Mayor and City Council of Baltimore for the sum of Twenty-Five Thousand Dollars ($25,000.00), will be required with each bid.

Bond in the amount of the contract price, will be required of the successful bidder.

Attention of Bidders is called to the minimum wage rates to be paid on this project.

The Board of Estimates reserves the right to reject any and all bids and/or to waive technical defects, as it may deem best for the interest of the City.

Bids when filed shall be irrevocable.

APPROVED:
JOHN J. HUNT,
SEWERAGE ENGINEER

(Continued on the following page)

OFFICIAL PROPOSALS

Bids: July 15, 1952

Route 6, Section 32

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:

Route 6, Section 32, from Netcong Circle to Lake Hopatcong Road, Widening, in the Borough of Netcong and Township of Roxbury, Morris County. Length = 1.933 miles. The principal items of construction are:

Estimated:
- 46,689 cu. yds. Roadway Excavation—Earth
- 4,000 cu. yds. Roadway Excavation—Rock
- 9,261 sq. yds. Stone Shoulders
- 32,036 sq. yds. Waterbound Macadam Base
- 26,566 sq. yds. Waterbound Macadam Inter. Course
- 5,936 sq. yds. Penetration Macadam Surface Course
- 9,299 tons Bituminous Concrete Surface Course
- 3,123 lin. ft. Rein. Conc. Culvert Pipe
- 56 Inlets
- 20,766 lin. ft. White Concrete Curbs

Bids for the above will be received at the office of the State Highway Department, Assembly Room, Room 140, in the State Highway Office Building, 1035 Parkway Avenue, Trenton, New Jersey, on Tuesday, July 15, 1952, at ten o'clock (10:00 A.M.—EASTERN STANDARD TIME), eleven o'clock (11:00 A.M.—DAYLIGHT SAVING TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plant and equipment with their bid.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, New Jersey, and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 139, State Highway Office Building, 1035 Parkway Avenue, Trenton, New Jersey. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: R. J. Abbott
State Highway Commissioner

Bids: July 15, 1952

Route 6, Sec. 30 and Route 6, Sec. 33

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:

Route 6, Section 30, Widening Sidewalk Area at Overpass of Lehigh & Hudson River Railroad, Independence Township, Warren County, and Route 6, Section 33, Bridge Sidewalk and Approaches at Mill Race, Washington Township, Morris County. Length of Rt. 6, Sec. 30 = 0.237 mile; Rt. 6, Sec. 33 = 0.112 mile. The principal items of construction are:

Estimated:

Roadway Items
- 232 cu. yds. Roadway Excavation—Earth
- 4,870 cu. yds. Borrow Excavation
- 418 sq. yds. Stone Shoulders
- 120 lin. ft. Rein. Conc. Pipe

Bridge Items
- 124 cu. yds. Concrete in Structures
- 19,695 lbs. Structural Steel
- 2,545 lbs. Reinforcement Steel

Bids for the above will be received at the office of the State Highway Department, Assembly Room, Room 140, in the State Highway Office Building, 1035 Parkway Avenue, Trenton, New Jersey, on Tuesday, July 15, 1952, at ten o'clock (10:00 A.M.—EASTERN STANDARD TIME), eleven o'clock (11:00 A.M.—DAYLIGHT SAVING TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plant and equipment with their bid.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, New Jersey, and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 139, State Highway Office Building, 1035 Parkway Avenue, Trenton, New Jersey. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: R. J. Abbott
State Highway Commissioner

Bids: July 21, 1952

Non-Skid Nosing and Strips on Terrazzo Stairway Treads Port Authority Bus Terminal

THE PORT OF NEW YORK AUTHORITY
CONTRACT O & M—145
PROPOSAL NO. 843

Sealed proposals for Non-Skid Nosing and Strips on Terrazzo Stairway Treads in the Port Authority Bus Terminal, 625 8th Ave., New York, will be received at the office of the Director of Purchase of The Port of New York Authority, Room 1402, 111 8th Ave., New York 11, until 11:00 A.M. (EDST), Monday, July 21, 1952, at which time and place proposals will be publicly opened and read.

Contract documents may be obtained upon request at the office of the Director of Purchase.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman

New York, July 3, 1952

Bids: August 7, 1952

4200'—24" Steel Sewage Force Main 4200'—36" Reinforced Concrete Effluent Sewer And Miscellaneous Appurtenant Structures

Sealed bids will be received by the Board of County Supervisors of Fairfax County, Virginia, at the Office of Sanitary Engineer, County of Fairfax, 114 E. Main Street, Fairfax, Virginia, until 2:00 O'CLOCK P.M., E.D.S.T., THURSDAY, AUGUST 7, 1952, for the installation of approximately 4200' of 24" Steel Sewage Force Main, 4200' of 36" Reinforced Concrete Effluent Sewer and Miscellaneous Appurtenant Structures (the force main and effluent sewer pipe and couplings and certain other materials are to be furnished by the Owner, without cost to the Contractor, at or near the project site), which has been designated as "Contract No. 8", and promptly thereafter they will be publicly opened and read in the Board of County Supervisors' Room, County Office Building, Fairfax, Virginia.

Plans, specifications and contract documents may be examined at the Office of Sanitary Engineer, and copies thereof may be obtained from Massey Engineers, Consultants, Ford Building, Fairfax, Virginia, upon payment of a deposit of $15.00 in cash for each set, which sum will be refunded upon the return of such documents in good condition within ten (10) days after the bid date. Bids must be submitted on the forms supplied for this purpose and in strict accordance with the instructions therefor. Each bidder will be required to show evidence of possession of a certificate of registration as a contractor in the Commonwealth of Virginia before his bid will be considered.

Each bid must be accompanied by a bid bond or certified check made payable to the County of Fairfax, Virginia, in the amount of at least five per centum (5%) of the total amount of the bid. The successful bidder will be required to furnish a performance and maintenance bond in a penal sum equal to the full contract price.

The time for completion of the contract is one hundred and eighty (180) consecutive calendar days and liquidated damages in the amount of $25.00 per day will be assessed in event of delay or default in the completion of the contract.

No bid may be withdrawn for a period of thirty (30) days after the actual opening thereof and the right is reserved to waive any informality therein and to reject any or all bids.

James J. Corbalis, Jr.
Sanitary Engineer, County of Fairfax
Fairfax, Virginia

Bids: July 18, 1952

Waterproofing Federal Building Masonry

THE PORT OF NEW YORK AUTHORITY
NEW YORK INTERNATIONAL AIRPORT
CONTRACT NYA-230.005

Sealed proposals for furnishing and installing waterproofing on North and East Elevations of Federal Building at New York International Airport will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 8th Ave., New York 11, until 11:00 A.M. Friday, July 18, 1952, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Engineer of Materials, Room 1110, and copies will be furnished upon deposit of $10 per set. Deposit to be delivered to the Treasury Department, Room 1001, where a receipt in duplicate will be issued. A copy of the receipt should then be delivered to the Engineer of Materials who will furnish the contract documents. The deposit will be remitted if the documents are returned in good condition, not later than 30 days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman

New York, July 3, 1952

U. S. Government

DEPARTMENT OF THE INTERIOR
Bureau of Reclamation. Sealed bids (Invitation No. DS-3744) will be received at Denver, Colorado, until July 22, 1952, for furnishing eighteen 40-foot by 24-foot radial gates for Nimbus Dam, Central Valley Project, California. Delivery is desired within 450 days. For particulars, address Bureau of Reclamation, Building 53, Denver Federal Center, Denver, Colorado.

NOTICE IS HEREBY GIVEN that sealed bids on Specifications No. 703C-265 for furnishing labor and materials and performing all work for the construction of Ogallala Substation, Transmission Division, Nebraska, Missouri River Basin Project, will be mailed to P. O. Box 280, Casper, Wyoming, or delivered to the office of the Bureau of Reclamation in time for the public opening at 10:30 a.m., Mountain Standard Time, July 15, 1952, at the office of the Bureau of Reclamation, Reclamation Center, Casper, Wyoming.

Copies of the standard forms and of the specifications may be obtained from the following offices of the Bureau of Reclamation: Avery A. Batson, Regional Director, Building No. 46, Denver Federal Center, Denver, Colorado; and I. J. Matthews, District Manager, P. O. Box 280, Casper, Wyoming. No charge for copies of the specifications and drawings furnished for bidding purposes; for all others $2.25 per copy, not returnable. Payments should be made by check or money order payable to the Treasurer of the United States.

FACED WITH COMPLAINTS of poor concrete in New York City, the industry turned to Roger Corbetta to lead a "clean-up." (ENR photos by Compton)

Lesson for construction businessmen: How New York got better concrete

In a little more than a year, a multi-faceted combine of the New York construction industry has worked a minor miracle: Ready-mixed concrete in the city is excellent, of uniform and dependable quality—improved 100%, according to qualified observers.

The miracle has been worked through simple cooperation and understanding. There have been no formal reports and recommendations, no "papers" presented in learned fashion. Just common-sense talk among men who know their business.

This is a fine illustration of what an industry can do to clean its own house.

• **Why cleanup?**—It was no particular secret, a year and half ago, that the quality of ready-mixed concrete in New York City left a good deal to be desired.

In a city where space is at a premium, ready-mixed is a major commodity. According to city agencies the quality was bad, it didn't meet specifications for water content or mixing, makers and contractors both were paying little attention to laboratory tests. Strict attention to requirements would have, and did, force the removal of concrete columns and floors after they were poured.

• **First, the facts**—The knowledge wasn't enough, of course. In order to get such a situation cleaned up you need people—in this case two men.

One of them was John P. Riley, head of the construction work for the New York City Board of Education (ENR June 26, p. 62).

QUICK ACTION meant no time for "minutes" in this matter.

A buyer of a lot of concrete—then struggling to get concrete designs in order to cope with the Korea-caused steel shortage—Riley called the contractors and the ready-mix people together (along with engineers and others) and laid down the law:

The concrete was bad—so bad and so undependable that it might force the board into some other form of construction.

It was up to the industry to do something about it.

• **Enter Corbetta**—The second man, who quite literally "took it from there" emerged at that meeting.

Never one to shy from the public statement of fact as he sees it, Roger Corbetta arose at that meeting, and told Riley some facts too: The laboratory tests used to check concrete quality were unreliable, were conducted by underpaid youngsters, weren't properly made.

Something had to be done. Here was a man to do it.

Corbetta—head of a construction firm that he built from a partly-borrowed $1,000 stake in 1922 to a concern with a present net worth of about $2 million, definitely knows his concrete.

A big, roly-poly man who reminds an observer of nothing so much as an over-size Fiorello LaGuardia, Corbetta is possessed of enormous—almost terrifying energy; of a mobile face and hands that serve to emphasize his objectives; a keen sense of humor and a shrewd knowledge of people and his business.

He started as a cement mason apprentice, became business agent of a union local, then went into business for himself—and in his business has

A BUSINESSMAN'S SOLUTION has achieved results.

stayed largely with concrete as a basic material.

• **Let's go**—Characteristically, Corbetta wasted no time. And he went to the heart of the problem.

"What's the use of kidding anybody," he declares, "we were all in it together. The laboratories, the contractors, the engineers, the architects, the cement people, the ready-mix people—all of us.

"None of us are perfect, none of us could point to a spotless record. But we're all businessmen—and concrete is our business.

"There wasn't any sense in making reports on each other, or just getting together to call each other bad names. What we had to do was get together, cut out all the fancy procedures—and find out what was wrong."

So the first meeting of what is now called the Concrete Industry Board (ENR June 19, p. 103) did something unheard of—called in the laboratory men. They weren't told what was going on—or even that their bitterest competitors would be present.

"It was funny to watch them eye the competitors," says Corbetta. "But we didn't give them much chance to do that—we told 'em to quit hiring kids to make tests that could mean hundreds of thousands of dollars to us. We told 'em to start paying decent salaries for such work—so they could get experienced men to do the job and do it right."

• **Up and at 'em**—No branch of the industry got away without pungent criticism.

At other sessions, the cement companies got it for their sales methods—trying to sell the contractors and engineers rather than the ready-mix people and dealers with the result that contractors were calling for so many different brands of cement that the ready-mix yards couldn't carry the brands in their bins; the engineers and architects were asked to study concrete properly, and find out what it could do, criticized for allowing such margins of safety as almost-invited sloppy work; the contractors, for improper inspection, for acceptance of poor concrete, for demanding such things as more water in the concrete as it was delivered by the trucks. And the ready-mix industry for its lack of standards, for acceding to demands for more water, and the like.

And the city got its share too—for poor inspection.

Again quite in character (he has no hesitancy, for instance, to sweep into a union-management meeting like a whirlwind, gather up all loose thoughts and weld them into what he wants) Corbetta did some inspecting on his own.

"Biggest effect," he says with a twinkle and an expression of child-like innocence, "was that nobody was sure when that so-and-so would check their job."

He found a few reasons for poor inspection too: Placement of levers where they would disembowl inspectors who ventured to check bins, "inadvertent" dumping of bags of cement on "nosey" people, and the like.

• **Results**—The Concrete Industry Board continues to meet—at odd moments, without prior notice. It even holds breakfast meetings.

Its meetings have no formal agenda, no formal roll-call, no formal speeches. But every meeting produced better understanding, better work. Rivals sat on the same board as directors, watched each other—but watched their products too.

Today, the CIB has 114-paid up members, no paid staff, and is growing steadily, week by week.

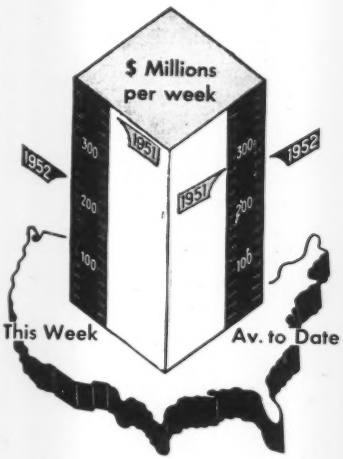
And it has achieved results.

The achievement has been that rivals have gotten together to talk over their own problems, and to realize that they are a part of a much larger group—of an industry. "It's funny," says Corbetta, "how little you really know of the other man's problems until you sit down at the table with him and talk it out. And how much you can do about straightening things out in a few minutes of face-to-face conversation that you could never do in months of writing memorandums and reports, or making telephone calls.

"What we're after is not threats and fights—but cooperation on a common problem. This isn't a fighting group, it's a working group. We've all got a stake in an industry—and one of us who doesn't do his job can wreck the efforts of the others, as well as give that industry a black eye. Without a single report, a single recommendation, it has succeeded in improving concrete construction—and with it most other forms of concrete—for New York City.

Activity This Week

As reported to ENR (in millions of dollars)

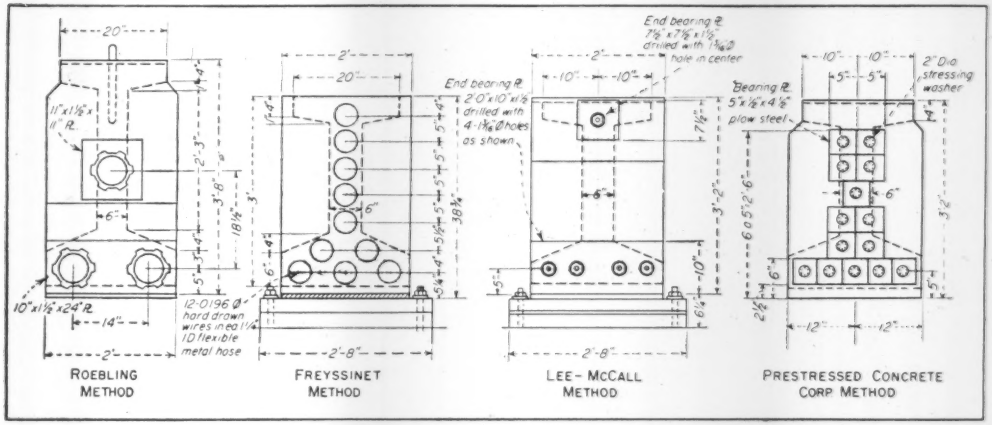


Contracts by type of work

	This Week	Cumulative 27 wks 1952	1951	% chge
Waterworks	$7.1	$124.9	$119.3	+5
Sewerage	10.4	138.4	169.0	−18
Bridges	11.0	205.5	165.0	+24
Highways	43.6	784.1	531.1	+35
Earthwork, Waterways	5.3	289.4	277.5	+4
Buildings:				
Public	37.8	982.9	1,231.6	−20
Housg., pub.	3.0	439.5	400.1	+10
Housg., priv.	31.3	1,510.5	1,070.6	+41
Commercial	10.1	327.1	354.0	−8
Industrial	40.5	1,539.8	2,398.2	−36
Unclassified	23.1	663.8	920.6	−28
Total	**$223.2**	**$7,005.9**	**$7,687.6**	**−9**

NOTE: Minimum size projects included are: Waterworks and waterways, $34,000; other public works, $60,000; industrial buildings, $82,000; other buildings, $300,000.

ENR indexes		Base Year = 100 1913	1926	1949
Constr. cost.	June	561.69	270.00	117.75
	May	557.11	267.80	116.79
Bldg. cost.	June	412.50	222.98	117.26
	May	410.30	221.80	116.65
Volume	May	554	225	160



FOUR METHODS of prestressing are specified in a contract awarded for four concrete bridges. End views of beams are shown above.

Which prestressing method has lowest cost?

The Massachusetts Department of Public Works took bids June 10 and awarded a contract the following week for prestressed concrete beams for four bridges, in an effort to determine which of four different methods of prestressing had the lowest cost. Each of the four bridges, consequently, had been designed for a different prestressing method. And each bidder was to bid on all the beams.

Two bids were submitted. New England Concrete Pipe Co., Newton, Mass., was low bidder and received a $158,490 contract. Preload Central Corp., New York City, the second bidder, was about $100,000 higher, with a bid of $258,040.

The Department of Public Works is still analyzing the bid prices of the low bidder and has not yet reached any conclusions as to which method is cheapest. The determination is also complicated by the fact that spans are slightly different in length and one bridge carries heavier live loads.

• **Experimental project**—The four bridges are to be constructed in the vicinity of Boston. They are on the relocation of the Newburyport Turnpike (Route 1), which will ultimately connect Boston with the New Hampshire Turnpike.

One, in the town of Newbury, will carry the six lanes of the turnpike (two 36-ft roadways and a 26-ft median strip) over Scotland Road. Skewed 33½ deg, it will span 65 ft and is designed for H20-S16 loading.

The other three bridges will be in the city of Newburyport. The turnpike will pass under them; they are designed for H20 loading. All three have two equal-length simple-beam spans of the same cross section.

Hale St. Bridge has 64-ft spans, is skewed 30 deg. and will carry a 30-ft roadway. Storey Ave. Bridge, skewed 19 deg, has 58-ft spans and will carry two 32-ft roadways. And Pine Hill Road Bridge, skewed 18 deg, has 59-ft spans, and will carry two 30-ft roadways.

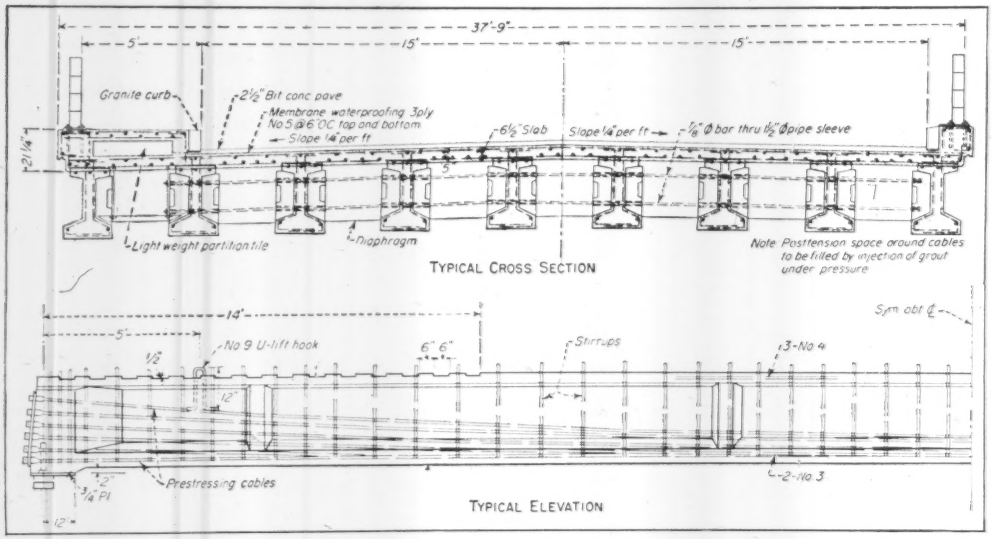
In all bridges, the roadways rest on the top flanges of I-shape prestressed concrete beams spaced about 4½ ft on centers.

The Department of Public Works considers the four prestressed concrete bridges in the nature of an experimental project. Bidders were advised that no alternatives to the four designated prestressing methods would be accepted.

• **Methods specified**—The work included in the contract involves furnishing the beams precast and prestressed at the site and testing one beam for each bridge. The test is part of a broad research program the department is carrying out in cooperation with Massachusetts Institute of Technology.

TABLE I—Estimate and Bid Prices for Prestressed Beams

	No. of Beams	Estimate Each	Estimate Total	New England Concrete Pipe Co. Each	New England Concrete Pipe Co. Total	Preload Central Corp. Each	Preload Central Corp. Total
Scotland Rd	24	$1,850	$44,400	$1,722	$41,328	$2,820	$67,680
Test Beam (Scotland Rd.)	1	$3,350	$ 3,350	$2,572	$ 2,572	$3,300	$ 3,300
Hale St.	18	$1,800	$32,400	$1,455	$26,190	$2,750	$49,500
Test Beam (Hale St.)	1	$3,300	$ 3,300	$2,305	$ 2,305	$3,100	$ 3,100
Storey Ave	36	$1,750	$63,000	$1,345	$48,420	$2,010	$72,360
Test Beam (Storey Ave.)	1	$3,250	$ 3,250	$2,195	$ 2,195	$2,400	$ 2,400
Pine Hill Rd	20	$1,750	$35,000	$1,649	$32,980	$2,825	$56,500
Test Beam (Pine Hill)	1	$3,250	$ 3,250	$2,500	$ 2,500	$3,200	$ 3,200
Total	102		$187,950		$158,490		$258,040



BEAMS contain steel cables curved to produce maximum uplift at midspan. They also will be prestressed transversely.

Specifications for the prestressing elements require that the wire strands and fittings for the Scotland Road Bridge should be of equal quality to those manufactured by John A. Roebling's Sons Co. or the American Steel and Wire Co. The Freyssinet system was specified for the Hale St Bridge, the Lee-McCall (British) system, for the Storey Ave. Bridge, and the Prestressed Concrete Corp. system, for the Pine Hill Rd. Bridge. All four methods call for end-anchored cables, not bonded to the concrete during initial prestressing, but later grouted in to establish bond.

• **Properties of the steel**—Each of the beams for the Scotland Road Bridge will be prestressed with three 1 9/16-in. dia bridge strands. The wire in these strands is required to be open-hearth steel, cold drawn, with the following properties: minimum ultimate tensile strength, 220,000 psi; minimum elongation at ultimate strength, 4% in 10 in.; and approximate yield strength at 0.7% extension, 160,000 psi.

The strands themselves must have a minimum ultimate tensile strength of 200,000 psi and a modulus of elasticity after prestressing of at least 24,000,000 psi. Each strand must be shop prestressed at a tension of at least 50% of the ultimate strength for a minimum of one-half hour, or until it reaches a stable condition. Initial prestress called for is 120,000 psi, or 171,000 lb per strand; final prestress, after creep and shrinkage, is assumed 15% smaller.

End attachments for this bridge consist of threaded fittings, to permit gripping the strand ends with a prestressing jack and anchoring by simply tightening a nut. Bond with the concrete will be prevented during casting by enclosing the strands in 2-in. dia light-gage metal sleeves.

For the Hale St. Bridge, each of the 10 prestressing cables per beam will be made up of twelve 0.196-in. dia wires. These are to have the same properties as specified for the wires in the Scotland Road Bridge strands. Initial prestress called for is 130,000 psi, or 47,000 lb per cable; final prestress again is 15% less.

End attachments consist of 4-in. cones, for wedging the wires in the anchorage, as manufactured by the Freyssinet Co., Inc., New York City. Bond with the concrete will be prevented with a 1¼-in. dia flexible metal hose.

For the Storey Ave. Bridge, each beam will be prestressed with four 1¼-in. dia bars and two ¾-in. dia bars of "Macalloy" steel. Of open-hearth manufacture, this steel must have an ultimate tensile strength between 145,000 and 160,000 psi; a 0.2% proof stress between 130,000 and 143,000 psi; a modulus of elasticity of 25,000,000 psi; an elongation in 2 in. of 14 to 18% and an elongation in 8 in. of 8 to 9%. Initial prestress called for is 87,000 psi, or a total of 450,600 lb; final prestress is assumed 15% less.

TABLE II—Analysis of low bid for prestressed beams

	Span	Loading	Bid per Beam	Concrete per beam —cu yd	Initial Tension per beam—kips	Cost per cu yd	System
Scotland Road	65.25'	H-20-S-16	$1,722	8.74	513	$197	Roebling
Hale St	65.02	H-20	$1,455	7.87	470	$185	Freyssinet
Storey Ave	58.45	H-20	$1,345	7.18	450.6	$187	Lee-McCall
Pine Hill Rd	59.27	H-20	$1,649	7.30	427.2	$226	Prestress Concrete Corp.

The bars will be placed in holes formed in the concrete with an expandable rubber core, which will be deflated and removed after the concrete sets. At the ends, the bars will be threaded and anchored with a Lee-McCall nut. This and the special steel probably will be obtained through the Preload Co. of New York City, which has a franchise for their manufacture.

For the Pine Hill Road Bridge, each beam will be prestressed with twelve 6-wire or ten 7-wire cables made of 0.25-in. dia wire. Initial prestress will be 427,200 lb. Wires will have heads pressed on them for end anchorage by a method developed by the Prestressed Concrete Corp. of Kansas City, Mo. Bond with the concrete will be prevented by enclosing the cables in a 1¼-in. square light-gage metal box.

• **Design criteria**—Factors of safety against cracking and failure are about the same for all bridges. The designs are based on criteria approved by the U. S. Bureau of Public Roads.

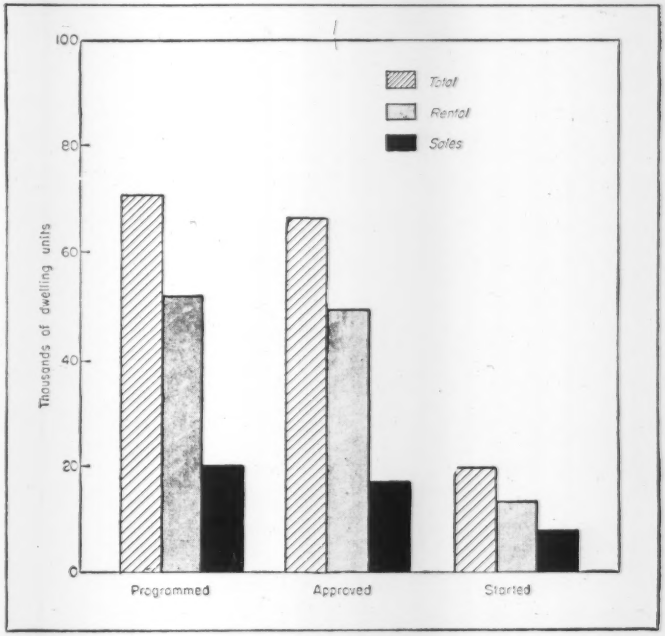
Concrete is required to have a minimum compressive strength of 4,000 psi (but a 5,000-psi concrete is specified). Initial prestress on the steel is limited to 60% of the ultimate strength. Diaphragms must be provided at ends of the spans and at intervals of no more than 20 ft, to permit transverse prestressing. Stirrups are required throughout the beams.

Under design load, there is to be no tensile stress on the under surface of the beams. Cracking load (permissible tensile stress 600 psi) must be at least equal to dead load plus twice live load. Ultimate load must not be less than 2.25 times the sum of dead and live loads or less than dead load plus 3.5 times the live load. Impact should be included in the live load.

Compressive stress during initial prestress may reach 2,000 psi, but under design loading is limited to 1,600 psi. A tension of 160 psi is permitted in the top of the beams during initial prestress.

Bids submitted for each bridge and the estimate made prior to the bidding are given in Table I. Low-bid price per beam for each structure will be found in Table II.

The bridges were designed by the Bridge Division of the Massachusetts Department of Public Works, under the supervision of John C. Rundlett, bridge engineer, and William A. Henderson, assistant bridge engineer. William F. Callahan is commissioner of public works and P. H. Kitfield, chief engineer.



Builders step up defense housing pace

After a slow start, the defense housing program is now picking up speed.

More than 20,000 units of programmed defense housing had been put under construction as of June 18, with almost 5,000 of them completed, the Housing and Home Finance Agency reported.

The number of units started represented an increase of 22% during the period from May 14, closing date of the last periodic HHFA report.

Completion of 4,843 units as of June 14 represented an increase of 60% over the 3,018 units reported completed in the previous report.

• **More coming up** — The biggest share of the defense housing program has not been started yet.

Construction progress was reported by the HHFA as of June 18 for 137 of the 169 areas in which defense housing has been programmed.

The reports showed that of the 71,301 units programmed for the 137 areas, applications from builders to construct housing under the program had been approved for 67,214 units, or 96% of the total programmed in those areas.

This is how the overall defense housing program now looks: 83,521 housing units programmed in 169 critical defense housing areas. The number includes 61,493 rental units and 22,028 sales units.

The FHA offices administering the program had approved applications from builders covering 79,965 units.

Congress knocks out all new hospitals for VA

A House-Senate conference report on the Independent Offices appropriations bill knocked out all new hospital construction by the Veterans Administration during fiscal 1953.

At the same time, the report set a ceiling of 35,000 new low-rent public housing units during fiscal 1953.

The report accepted the Senate-set amount for VA hospitals—$66.3 million—rather than the House figure of $153.6 million.

The Housing and Home Finance Agency, except for the 35,000 public housing limitation, suffered little direct damage. Most of the pinch will come from cuts in administrative funds. This will particularly affect the Public Housing Administration.

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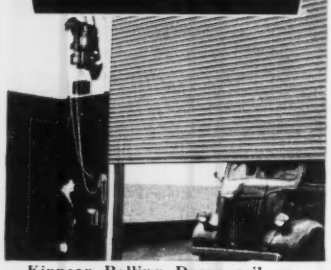

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UNIT PRICES

Highway project, Mich.

City lighting, power and signal facilities—underground conduit, overhead lines, street lighting cable, ornamental street lighting units and traffic signal equipment are part of the $563,000 contract for John C. Lodge Expressway, an 0.434 mile Michigan State Highway project in Detroit. Harry C. Coons is the chief state engineer.

Work also includes surfacing two 36-ft concrete pavements, 10-in uniform; and alterations to water mains. The concrete pavement must be reinforced throughout with mesh, bar, mat or expanded metal mesh.

Unit prices shown here for water mains cover valves, gate boxes and fittings. The contractor must furnish all materials required for trenching, laying, testing and backfilling the new water mains.

The schedule of wage rates for the project range from $0.75 to $2.45 for laborers; $2.00 to $2.20 for teamsters; $1.91 to $2.70 for operating engineers.

Work began in June and must be finshed by December, 1952. Bidders include:

1	C Denton Constr. Co., Detroit, Mich	$562,713
2	L. A. Davidson, Lansing, Mich	572,229
4	Julius Porath & Son Co., Detroit, Mich	592,665

Bids: 5-14-52 Items	Unit	Quantity	Unit Prices 1	2
Remove trees, 8" to 12" dia	ea	5	25 00	30 00
13" to 24" dia	ea	10	75 00	50 00
25" to 36" dia	ea	11	150 00	100 00
old pavement	sy	11,057	1 30	1 30
masonry & concrete	cy	572	10 00	10 00
sidewalk	sy	2,225	1 00	1 00
curb	lf	1,134	1 00	1 00
catch basins	ea	1	30 00	100 00
asphalt surface	sy	694	1 50	2 00
rlwy track (single track not under service	lf	900	4 00	2 00
Excavation, earth	cy	22,318	1 00	1 20
Overhaul comp cymi		3,563	0 22	0 25
Porous bkfill grd B, L. M	cy	820	4 00	5 00
grd B, mod L. M.	cy	3,223	4 00	3 00
Sand-gravel bkfill L. M	cy	21,649	2 00	2 00
Trim & finish bkslopes	stay	3	100 00	100 00
Concrete, grd A	cy	433	70 00	50 00
Steel reinf	lb	39,252	0 15	0 12
Culv, cls B 12"—0'-10' depth	lf	686	3 50	4 00
cls B 15"—10'-16' depth	lf	170	6 50	7 00
Sewer, 12"—0'-10' depth	lf	506	4 00	3 60
Sewer with open jts, 6"	lf	3,868	1 50	1 50
Manholes 1A 0'-10' depth	ea	1	250 00	300 00
16'-25' depth	ea	1	700 00	1,000 00
1AD 0'-10' depth	ea	2	250 00	300 00
1AD 10'-16' depth	ea	1	350 00	500 00
1AD 16'-25' depth	ea	1	700 00	1,000 00
Catch basins 3H 0'-10' depth	ea	3	250 00	300 00
3J 0'-10' depth	ea	3	250 00	300 00
3B 0'-10' depth	ea	9	250 00	300 00
3D 0'-10' depth	ea	2	250 00	300 00
3E 0'-10' depth	ea	1	250 00	300 00
6J 0'-10' depth	ea	1	200 00	300 00
6B 0'-10' depth	ea	3	200 00	250 00
6E 0'-10' depth	ea	1	200 00	300 00
Inlets 5H 0'-10' depth	ea	5	200 00	200 00
5J 0'-10' depth	ea	1	200 00	200 00
5 with salvaged cover J 0'-10' depth	ea	2	200 00	200 00
Cover H	ea	2	70 00	50 00
Tile trape	ea	10	50 00	30 00
Adjust manhole covers	ea	10	40 00	40 00
catch basin covers	ea	6	40 00	40 00
Reconstructing manholes	ea	4	100 00	200 00
Abandoning manholes	ea	10	50 00	50 00
catch basins	ea	8	50 00	50 00
Fine grading & cleanup	stay	14	75 00	50 00
Fine grading	stay	56	25 00	50 00
Conc, curb, detail 1	lf	137	3 00	4 00
detail 1A	lf	107	3 00	4 00
detail 2 with 9" curb face	lf	2,104	2 40	2 50
with 6" curb face	lf	1,784	2 30	2 50
det 2A with 9" curb face	lf	715	2 40	3 00
det 2A with 6" curb face	lf	202	3 00	3 00
Conc curb & gutter det A	lf	5,024	2 60	2 60
det B	lf	5,065	2 60	2 60
onc driveway return, det 15	lf	206	3 00	4 00
det 15A	lf	52	3 00	5 00
onc pavement, uniform, 10"	sy	19,849	4 75	4 80
8"	sy	746	4 50	6 00
7"	sy	88	5 00	8 00
Conc base course, uniform 9"	sy	14,550	4 00	4 40
7"	sy	287	4 20	7 00
Pavement reinf	sy	35,145	0 55	0 55
Bit bond coat AE-2	gal	2,863	0 35	0 40
Bit conc wear course	t	2,223	12 50	13 00
Conc sidewalk, 4"	sf	7,901	0 50	0 50
7"	sf	704	0 75	0 70
Conc noses	ea	4	200 00	40 00
Aggregate shoulders	t	1,032	4 00	5 00
Sodding, class A	sy	4,374	0 85	0 60
Road project markers	ea	2	25 00	25 00
Seeding, class A	ac	8	300 00	200 00
Chipping pavement for joints	lf	20	2 00	5 00
Final trim & clean up	stay	56	20 00	100 00
Organic fertilizer	lb	6,300	0 30	0 06
Inorganic fertilizer	lb	3,150	0 30	0 06
Mulching	t	16	50 00	40 00
Restoring roadside	ac	1	100 00	200 00
Bridge railing	lf	372	15 00	15 00
Chain link fence	lf	2,075	2 00	2 00
Drive gates	ea	1	300 00	200 00
Stnd type D handhole	ea	2	400 00	400 00
Conc encased conduit 4"	lf	30	7 00	15 00
3"	lf	42	6 00	12 00
2"	lf	146	5 50	10 00
1"	lf	480	5 00	4 00
Sewer, 6"	lf	120	5 00	3 00
Ornamental st light units off bridge	ea	51	750 00	750 00
bracket arms, 2	ea	2	1,100 00	1,050 00
on bridge	ea	12	500 00	475 00
Ld cvd st lt cables, 2	lf	265	2 00	2 00
1	lf	719	1 00	1 00
St lt pkway cables, 6	lf	95	10 00	10 00
4	lf	100	6 50	7 00
3	lf	80	5 00	5 00
2	lf	500	3 00	3 00
1	lf	10,970	1 60	1 70
Remove 2 -6 OHTS 2ndary wire	lf	1,035	0 25	0 25
Remove 2 span wires with traffic signal	ls	1	500 00	400 00
Salv O.P. orn lt unit on new post foundation	ea	1	250 00	200 00
Remove exist orn st lt units	ea	3	70 00	70 00
Misc. work	ls	1	1,000 00	500 00
Water main, cmt lined 12"	lf	1,956	13 25	15 00
8"	lf	145	12 00	15 00
Water main, class 150 6"	lf	32	17 50	20 00
Temporary blowoff	ea	4	125 00	300 00
Sand backfill, L. M.	cy	850	4 00	3 00
Water main trench, for wk to be done by DWS	lf	32	10 00	5 00
Concrete thrust blocks	ls	1	150 00	400 00
Std DWS gate wells, 12"	ea	3	450 00	400 00
8"	ea	1	325 00	400 00
6"	ea	1	300 00	400 00

Concrete prices, Canada

Concrete sidewalks and curbs show a decided increase over 1951 prices on bids received June 4, 1952 by the City Engineer, Saskatoon, Canada. Saskatoon Contraction Co. got the contract for the 1st and 2nd section for $57,427 and Westcon Limited the contract for the 3rd and 4th section for $86,705.

Unit prices are shown below on the four sections of work with the 1951 prices.

Items	Unit	Quantity	Unit Prices 1952 1951	Low Bidder
Section 1				
Sidewalk	sf	43,200	$0.325	$0.40
Lane crossing	sf	300	0.60	0.80
Combined curb	lf	700	0.81	1.21
Separate curb	lf	6,300	0.85	1.20
Section 2				
Sidewalk	sf	51,000	0.33	0.36
Lane crossing	sf	500	0.61	0.80
Combined curb	lf	2,500	0.815	1.16
Separate curb	lf	8,200	0.855	1.20
Section 3				
Sidewalk	sf	62,000	0.325	0.42
Lane crossing	sf	200	0.60	1.00
Combined curb	lf	2,500	0.81	1.32
Separate curb	lf	9,500	0.845	1.275
Section 4				
Sidewalk	sf	61,500	0.325	0.42
Lane crossing	sf	1,500	0.60	1.00
Separate curb	lf	13,900	0.85	1.275

Bids Asked—Low Bidders—Contracts Awarded—First Section

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.
ELSIE EAVES, Manager *J. A. MAHONEY, Reports* *M. R. ROESSLER, Statistics*

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
July 8 Massachusetts
STREETS AND ROADS
July 8 Massachusetts July 9 Rhode Island

SOON LETS CONTRACT—BUILDINGS

▲ Mass., Boston — CHURCH and MONASTERY — St. Anthony's Shrine, c/o Father Harold R. Blake, 103 Arch St., soon lets contract church, monastery, 114 Arch St. $3,200,000. Brother Cajetan, J. B. Baumann, OFM, 44 Whitehall St., New York, N. Y., archt. Maurice A. Reidy, 101 Tremont St., Boston, engr. CD 5/21.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ MASSACHUSETTS—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,
American Bridge Co. (div. U. S. Steel) 1414 Statler Bldg., Boston, Mass. LB $2,939,976, est. $1,500,000. U-345 (1) steel superstructure with concrete deck and bascule draw with open grid deck, Andrew P. McArdle Bridge, Boston and Chelsea. Bids June 18. CD 6/4.

▲ **S. A. Healy Co.**, 61 Winchester Ave., White Plains, N. Y. CA, $6,335,336, est. $6,000,000. Contr. 190, North Metropolitan Tunnel and Shaft Sewer, 33¼ mi.; BOSTON, MASS. State, Metropolitan Dist. Comm., Constr. Div., 20 Somerset St., Boston, Mass. CD 5/7, under LB.

▲† **Merritt-Chapman & Scott Corp.**, 79 Milk St., Boston, Mass., LB, $1,195,714, aviation gasoline and jet fuel and distr. sys., Melville, NOY 29573, Spec. 31240. NEWPORT, R. I. P. Wks. Office, First Naval Dist., 495 Summer St., Boston, Mass. Bids June 17. CD 5/20.

BUILDINGS

LOW BIDS AND CONTRACTS

Frouge Constr. Co., 74 Goodsell St., Bridgeport, Conn., CA, $688,000, Item 1, Proj. B/A-R-76 Henry Abbott Technical SCHOOL, Gayes Rd., DANBURY, CONN. State P. Wks. Comr., Hartford, Conn. Awarded June 2.

▲ **Bonwit Constr. Co.**, 100 Gold St., New York 7, N. Y., CA, $1,500,000, 100 HOMES, on 33-acre tract, Sound Beach Avenue Extension, OLD GREENWICH, CONN. Greenwich Homes, Inc., c/o contractor.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
July 8 Maryland July 10 New Jersey
STREETS AND ROADS
July 10 New Jersey

BIDS ASKED—BUILDINGS

† Pa., Letterkenny—ADMINISTRATION, etc.—B.A. 7/9—Dpt. Army, 24 St. and Maryland Ave., Baltimore, Md., admin. bldg., sewers, storm drains, electric and water distr. sys., and road surf. $500,000. Extended date. Modjeik & Masters, State St. Bldg., Harrisburg, engrs.-archts.

N. Y., Garden City—MUNICIPAL—B.A. 7/22—Supt. P. Wks. 110 7th St., Garden City, municipal bldg. and accessory garage $875,000 CD 2/25.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ NEW YORK—Bureau Contracts & Accounts, The Governor Alfred E. Smith State Office Bldg., Albany,
Nassau-Mascali Constr. Corp., 69-34 61 Ave., Woodside, N. Y., CA, $1,163,283, widen., resurf. 10.02 mi. Northern State Parkway from Nassau-Queens Co. line to Union Ave., Nassau Co.;
Triple Cities Constr. Co. and N. R. Corbisselo, Inc., 36 Tompkins St., Binghamton, N. Y., CA, $1,380,186, construct 2.32 mi. Brandywine Ave. extens. of Binghamton Arterial from underpass on Brandywine Ave. to N. Chenango St. in Port Dickinson, etc. 0.18 mi. Broome Co.;
Jess F. Howes, Sidney Center, N. Y. CA, $569,121, construct 4.5 mi. Livingston Manor-Youngsville County Rd., Sullivan Co.;
Johnson Drake & Piper, Inc., 86 Trinity Pl., New York 6, N. Y., CA, $3,020,884, construct 7.73 mi. Thruway with twin 25-ft. concrete arteries, misc. work totaling 0.66 mi., Genesee Co.;
Collins Bros., Waterford Rd., Mechanicville, N. Y. CA, $3,342,278, construct 4.49 mi. twin 25-ft. concrete arteries of the Thruway, four highway grade separation structures, one stream bridge, access drives, approachways relocation 0.69 mi. Rts. 5, misc. work totaling 1.33 mi. from Burch Creek easterly to point 1 mi. beyond East Schuyler, Herkimer Co.;
Lizza & Sons, Inc., 21 Orchard St., Oyster Bay, N. Y. CA, $1,162,981, construct 7.54 mi. Nesconsett-Port Jefferson Station Rd. (County Road 80) with twin 25-ft. b. conc. mall-separated arteries, misc. work, Suffolk Co. Grand total $10,638,733. Bids May 29. CD 6/3, under LB.
▲ **L. I., Waldman & Co., Inc.**, 38-06 28 St., Long Island City, N. Y. CA, $1,409,519, platform exten. Group X, Times Square, Fifth Ave., Vernon Blvd., Jackson Ave. and Hunters Point Ave. Stations, NEW YORK. Bd. Transportation, 370 Jay St., Brooklyn, N. Y. Bids May 8. CD 5/20, under LB.
▲† **Conduit & Foundation Corp.**, 770 S. Schuylkill Ave., Phila., Pa., LB, $1,929,258, water distr. system, sanitary sewerage system, storm sewers, underground steam distr. system, aerial electrical distr. sys. and paving, FORT DIX, N. J. Dpt. Army, 121 N. Broad St., Phila., Pa. Bids June 18. CD 5/22.
▲PENNSYLVANIA—State Hy. & Bridge Auth., 506 North Office Bldg., Harrisburg,
F. D. Kessler, Inc., Northumberland, Pa., CA, $1,636,891, construct 24,009 ft. divided highway of rein.-con. 24 ft. wide on each side of divisor, 2 plate girder and one I-beam bridge, sect. of Allentown By-Pass Rte. 22, Lehigh and Northampton Counties. Bids June 6, awarded June 19. CD 6/10, under LB.
PENNSYLVANIA—State Hy Dpt., 506 North Office Bldg., Harrisburg,
C. F. Goeringer Constr. Co., Inc., 73-75 E. Market St., Wilkes-Barre, Pa., CA, $989,717, construct 9,545 ft. crushed aggregate base and with bit. surf. 50 ft. wide and wid'n. T. R. 11, Luzerne Co. Bids June 6, awarded June 19. CD 6/10, under LB.
PENNSYLVANIA—State Hy. Dpt., 506 North Office Bldg., Harrisburg,
James D. Morrissey, Inc., 9119 Frankford Ave., Phila. 14, Pa., CA, $806,561. Construct 8,812 ft. divided highway of plain c. conc. base with bit. surf. 33.08 ft. wide on each side of concrete divisor, L. R. 67047 (2), Phila. Co. Bids May 23, awarded June 19. CD 5/26, under LB.
Bristol Boro, Bristol, Pa. rejected bids, sewage treatment plant alterations, addns., BRISTOL, PA. LB $636,705. CD 5/8, under LB.
PENNSYLVANIA—State Hy. Dpt., 506 North Office Bldg., Harrisburg,
Ben Constr. Co., 101 Hargrove St., Pittsburgh 26, Pa., LB $505,401. c. conc. 8,840 ft. T. R. 19, Allegheny Co.;
J. D. Eckman, Box 176, Atglen, Pa., LB $219,906, widʼn. with crushed aggregate base and bit. surf. and bit. surf. new and existing base 24 ft. wide, 28,320 ft. T. R. 100, Chester Co.;
Irving N. Loomis, 69 S. Main St., Montrose, Pa., LB $224,537. widʼn. 13,062 ft. existing road with crushed aggregate base 4 ft wide and bit. surf. new and existing pavement 22 ft. wide, construct rein.-con. bridge, T. R. 6, Potter Co. Bids June 20. CD 5/26.
▲ PENNSYLVANIA—State Hy. & Bridge Auth., 506 N. Office Bldg., Harrisburg,
John F. Casey Co., Becks Run Rd., Pittsburgh, Pa., LB $653,731, construct rein.-con. (river) retaining wall and partial constr. of adjacent roadway embankment, 1,413 ft. Riverwall at downtown interchange, Penn-Lincoln Parkway, Allegheny Co.;
Adam Eidemiller, Inc., Greensburg, Pa., LB $126,546, constr. 6-lane divided concrete highway and ramp from Penn-Lincoln Parkway to Bates St., approx. 288 ft. and a concrete deck I-beam bridge, Allegheney Co. Bids June 20. CD 5/22.
▲† **F. H. Martell Co., Inc.**, 1023 20 St. N. W., Wash., D. C. CA $1,648,800. 7x10 ft. sonic wind tunnel at David Taylor Model Basin, NOY 71303, CARDEROCK, MD. Dist. P. Wks. Office, Potomac River Naval Command, Naval Gun Factory, Wash., D. C. Bids June 10. CD 5/23.

BUILDINGS

LOW BIDS AND CONTRACTS

Buhl Constr. Co. Inc., 45 W. 45 St., New York 19, N. Y. LB $788,990, P. S. 16 SCHOOL, Wilson St. between Bedford and Lee Aves., BROOKLYN, N. Y. Bd. Educ., 49 Flatbush Ave. exten., Brooklyn 1, N. Y. Bids May 29. CD 7/12.
Menorah Home & Hospital for Aged & Infirm, 871 Bushwick Ave., Brooklyn 21, N. Y. Separate Contracts. $550,000. 5 story HOSPITAL addn., 869 Bushwick Ave., BROOKLYN, N. Y. CD 10/11.
▲ **Fawn Ridge Homes**, c/o Samuel Paul, archt., 163-18 Jamaica Ave., Jamaica, N. Y. Owner Builds. $1,500,000. 58 houses on tract on Lakeville Rd., LAKE SUCCESS, N. Y.
▲ **Cauldwell Wingate Co.**, 101 Park Ave., New York 17, N. Y. LB $3,938,000, general constr.;
J. L. Murphy, Inc., 340 E. 44 St., New York 17, N. Y. LB $662,000, heating and ventilating;
Spitzer Elec. Co., 420 Lexington Ave., New York 17, N. Y. LB $398,900, electric for Mariner's Harbor HOUSES, (Proj. No. NY 50-20) within area bounded generally by Grand View Ave., Roxbury St., Lockman Ave., Continental Pl., Richmond Boro, MARINERS HARBOR, N. Y. New York City Housing Auth., 63 Park Row, New York 8, N. Y. Bids June 18. CD 6/12.
▲ **Joseph Picciola & Ernest Pagana**, c/o Richard E. Crino, archt., 4740 White Plains Rd., New York 66, N. Y. Owner Builds. Approx. $3,000,000, 84 HOUSES on 70 acre tract on Quaker Ridge Rd., NEW ROCHELLE, N. Y.
▲ **Maplecrest Rambler Homes**, c/o Alwin Cassens, archt., 145 S. Franklin Ave., Valley Stream, N. Y. Owner Builds. Approx. $1,300,000. 110 HOUSES on tract on North Jerusalem Rd., east of Bellmore Ave., NORTH MERRICK, N. Y.
▲ **Shawcrest Park Homes**, c/o Teas & Steinbrenner, archts., Homeland Bldg., Malverne, N. Y. Owner Builds. $2,000,000. 138 HOUSES, on 32 acre tract, Jerusalem Ave., east of Seaman Neck Rd., WANTAGH, N. Y.
▲ **Audubon Manor**, Merchant St., Audubon, N. J. Separate Contracts. $2,400,000, RESIDENTIAL DEVELOPMENT, Merchant St., AUDUBON, N. J. Dante J. D'Anastasio, 1815 Federal St., Camden, N. J., archts.
C. E. Casale, 236 Grandview Ave., Pitman, N. J. Separate Contracts, $800,000, RESIDENTIAL DEVELOPMENT, Main St., GLASSBORO, N. J.
James P. Shitesall, 703 Main St., Riverton, N. J. Separate Contracts, $660,000 RESIDENTIAL DEVELOPMENT, Main St. and Thompson Ave., RIVERTON, N. J. Henry W. Petty, 241 Chestnut St., Moorestown, N. J., archt.
Anderson-Joyce, Inc., 1518 Walnut St., Phila., Pa., Separate Contracts. $635,500, RESIDENTIAL DEVELOPMENT, Marks Rd., ENFIELD (Phila. P.O.), PA. Charles T. Okie, Darby Rd., Devon, Pa., archt.
B. Bornstein & Son, 2027 Arch St., Phila., Pa., LB $577,900, SCHOOL, Johnson and Crittenden Sts.;
McClosky & Co., 1620 W. Thompson St., Phila., Pa., LB $639,000. SCHOOL, Provident Rd. and Pickering St., etc. PHILA., PA. Bd. Educ., 21 and Winster Sts., Phila., Pa. Bids June 17. CD 5/21.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
July 23 Louisiana July 25 Alabama
STREETS AND ROADS
July 8 West Virginia July 9 Louisiana
July 25 Alabama

PROJECTS COVERED

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $34,000; other public works $60,000; industrial buildings $82,000; other buildings $300,000.

Classes of Construction
(Name in order of Listing)

Water Supply
Sewers, Waste Disposal
Bridges
Streets & Roads
Earthwork, Waterways
Latin America
Public Buildings
Commercial Buildings
Industrial Buildings
Unclassified

Stages Reported

PROPOSED WORK: Including appointment of engineers or architects.
BIDS ASKED (new announcements only). For full calendar, see also preceding issues of ENR.
LOW BIDDERS: On jobs below $500,000 value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.
CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

Symbols and Abbreviations Include:

† Federal Government
▲ Project of $1,000,000 or over.
B.A. Bids Asked
ENR Engineering News-Record
CD Engineering News-Record Construction Daily

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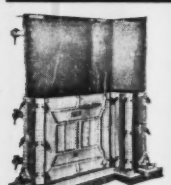

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Oakland, Calif.
Denver, Colo.

BIDS ASKED—BUILDINGS

† **Va., Fort Eustis**—ORDNANCE FACILITIES, etc.—B.A. 7/10—U. S. Eng., foot of Front St., Norfolk, 1 and 2 story structural steel frames, concrete masonry, precast concrete or gypsum plank roofs, ordnance facilities and rail warehouse. $800,000. Plans deposit $20. Woodward, Oliver & Smith, 409 Yarmouth St., Norfolk, archts. Mills, Petticord & Mills and Assoc., 3308 14th St., N. W. Wash., D. C., engrs. CD 2/9/51.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† **Brown-Coble Constr. Co.,** Lexington, N. C. LB $892,863, airfield paving, Naval Air Facility, NOY, 73561. Spec. 33699, WEEKSVILLE, N. C. P. Wks. Office, Headquarters Fifth Naval Dist. U. S. Naval Base, Norfolk, Va. Bids June 17. CD 5/22.

† **Conn Structors,** 209-212 Whitehead Bldg., Atlanta, Ga., LB $793,779, brick constr.;

Skinner & Ruddock, King St. Ext., Charleston, S. C. LB $741,423, frame constr. airmen's dormitories, mess and office bldgs., Charleston Airfield, No. 38-081-52-83, CHARLESTON, S. C. U. S. Eng., Custom House, Charleston, S. C. Bids June 26. CD 6/20.

▲† **Atlas Constr. Co.,** Waxahachie, Tex. LB $1,123,561, 7,000,000 cu. yd. excav. for Bayou Lafourche Channel impvs., Ouachita, Richland and Morehouse Parishes, Inv. 52-202, LOUISIANA. U. S. Eng., P. O. Box 60, Vicksburg, Miss. Bids June 19. CD 5/28.

▲ **TENNESSEE**—State Hy. Dpt., Nashville.

L. & M. Constr. Co., 843 Vance Ave., Memphis, Tenn., LB $150,235, wid'n concrete deck girder bridge over Cypress Creek and approaches 0.174 mi. State Rte. 5 and 15 (East Court Ave.) in Selmer, Proj. No. SAMP 208-A, McNairy Co.;

Marion Constr. Co., Craighead Ave., Nashville, Tenn., LB $897,240, construct substructure of the Victory Memorial Bridge across the Cumberland River at Main St. in Nashville, incl. retaining walls and frontage streets, 0.651 mi., from the Public Square and extending to intersection of Main and Third Sts. Proj. No. U-068-1-(1) Part 2, Davidson Co. Bids June 20. CD 6/2 and 4/24.

† **Central Contg. Co.,** Oshkosh, Wis. LB $883,800. 3 pumping stations, Paddys Run, Lee's Lane, Mill Creek in connection with flood wall, KENTUCKY. U. S. Eng., 830 W. Broadway, Louisville 3, Ky. Bids June 20. CD 5/19.

BUILDINGS

LOW BIDS AND CONTRACTS

Charles H. Tompkins Co., 907 16th St. N.W., Wash., D. C. CA. $800,000. 8 one story concrete masonry WAREHOUSES, ARLINGTON, VA. "H" Street and Ambassador Hotel Corp., c/o contractor, Edwin Weihe, 927 15th St. N.W., Wash., D. C. archt. Beall & LeMay, 1726 "M" St., N.W., Wash., D. C., engrs.

▲ **American Constr. Co., Inc.,** 261 Constitution Ave. N.W., Wash., D. C. LB. $1,081,630, STORAGE MAGAZINES, gun emplacements, roads and railroad, Naval Proving Grounds, NOY 73339. DAHLGREN, VA. Dpt. Navy Potomac River Naval Command, Naval Gun Factory, Wash., D. C. Bids June 18. CD 6/4.

Four P Constr. Co., c/o owner, CA. Approx. $750,000. 152 one and two-story, concrete masonry, frame and built-up roofs, low rental HOUSING units, NEWPORT NEWS, VA. Carver Court Corp., 3100 Virginia Ave., Newport News, Va., William, Cole & Blanchard, 3515 Virginia Ave., Newport News, Va., archts.

† **J. A. Jones Constr. Co.,** 209 W. 4 St., Charlotte, N. C., LB. $877,317, Bachelor OFFICERS QUARTERS, Inv. 52-22, FORT BRAGG, N. C. U. S. Eng., 308 Customhouse, Wilmington, N. C. Bids June 19. CD 5/28.

▲ **C. L. Rhodes,** Box 290, Decatur, Ga., LB. $1,025,000. TWIN BLDGS. addns. at State Hospital, MILLEDGEVILLE, GA. State Dpt. P. Welfare, State Office Bldg., Atlanta, Ga. Bids June 20. CD 5/26.

▲ **Ray M. Lee Co.,** 1004 Edgewood Ave., Atlanta, Ga., LB, $1,255,292, HOSPITAL, VALDOSTA, GA. City and Lowndes Co., Valdosta, Ga. Bids June 19. CD 5/22.

Winchester Constr. Co., 828 Baker St., Tallahassee, Fla., CA, $856,000, Negro Male and Female WARDS at Florida State Hospital, CHATTAHOOCHEE, FLA. Florida State Imprvt. Comn., Caldwell Bldg., Tallahassee, Fla. Bids June 12. CD 6/19, under LB.

▲ **P & E Realty Corp.,** c/o Maurice S. Weintraub, archt., 235 Lincoln Rd., Miami Beach, Fla., rejected bids, 170-unit HOTEL, HALLANDALE, FLA. LB. $1,000,000. CD 6/13, under LB.

▲ **Arnold Constr. Co.,** West Palm Beach, Fla., CA, $1,072,297, HIGH SCHOOL and AUDITORIUM, 13 St. and Myrtle Ave. for Colored People, known as Cookman School, JACKSONVILLE, FLA. Duval County School Bd., Jacksonville, Fla. Awarded June 20. CD 10/10/49.

Pittman Constr. Co., 2925 Franklin Ave., New Orleans, La. CA. $945,954. 120 addnl. HOUSING units, BILOXI, MISS. Biloxi Housing Auth., Biloxi, Miss.

▲ **M. T. Reed Constr. Co.,** 162 Millsaps Ave., Jackson, Miss. CA. $1,553,333. general contract carpet mfg. PLANT, GREENVILLE, MISS. City, Greenville, Miss. To be operated by Alexander Smith & Sons Carpet Co., Saw Mill River Rd., Yonkers, N. Y. Bids June 17. CD 5/26.

▲ **L. B. Priester & Son,** 1403 12 Ave., Meridian, Miss. LB $1,151,354. est. $1,650,000. general contract clay sewer pipe mfg. PLANT on Hy. 80, MERIDIAN, MISS., to be leased and operated by W. S. Dickey Clay Mfg. Co., Commerce Trust Bldg., Kansas City, Mo. City, Hill R. Healan, city mgr., Meridian, Miss. Bids June 18. CD 6/3.

▲† **R. P. Farnsworth & Co., Inc.,** Box 2029, Baton Rouge, La. LB. $1,325,000. addnl. ENGINE TEST CELL BLDGS. Michoud Ordnance Plant, Eng. 41-243-52-102, NEW ORLEANS, LA. U. S. Eng., 606 Santa Fe Bldg., Galveston, Tex. Bids June 20. CD 6/3.

Caldwell & McCann, 622 Neosho St., Baton Rouge, La. LB. $794,800. AGRICULTURE-SCIENCE BLDG., on campus of Southern University, SCOTLANDVILLE, LA. State Bd. Educ., Capitol Bldg., Baton Rouge, La. Bids June 17. CD 5/21.

▲ **Frank Messer & Son,** Paddock Rd., Cincinnati, O. CA $1,415,900, est. $2,000,000. brick, steel, concrete HOSPITAL, FORT THOMAS, KY. State and Campbell Co., Hospital Bd. Trustees, Fort Thomas, Ky. Bids Mar. 26, awarded June 18. CD 4/1, under LB.

▲ **Foster & Creighton Co.,** American Natl. Bank Bldg., Nashville, Tenn., CA. $1,306,800, STUDENT ACTIVITIES Bldg., KNOXVILLE, TENN. University of Tennessee, Administration Bldg., Knoxville, Tenn. Bids Apr. 15. CD 6/18, under LB.

▲ **Continental Mortgage Co.,** Osceola, Ark. Owner Builds. $12,000,000. 1,500 HOUSING units, MEMPHIS, TENN. CD 6/10.

Steadman Constr. Co., Kingsport, Tenn., CA. $739,000, 4 new elementary SCHOOLS, 5 SCHOOL addns., MOUNTAIN CITY, TENN. Johnson Co. Bd. Educ., Mountain City, Tenn. Bids June 10. CD 6/16, under LB.

† **Bowman Constr. Co.,** Oak Ridge, Tenn., CA $928,190. rehabilitation of 375 DWELLINGS, OAK RIDGE, TENN. U. S. Atomic Energy Comn., P. O. Box 3, Oak Ridge, Tenn. Bids June 5. CD 6/13, under LB.

MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS

STREETS AND ROADS

July 8, 9, Michigan — July 15, Indiana

BIDS ASKED—BUILDINGS

Ind., Gary—DEPARTMENT STORE—B.A. 7/15—Little & Stevens Realty Co., 504 Broadway, 4 story, 50,000 sq. ft. department store, $700,000. Beine, Hall & Curran, 607 Broadway, archts. J. C. Penney Co., lessee. CD 1/16/46.

Ind., Hammond—OPERATIONS—B.A. 7/16—Northern Indiana Public Service Co., 5265 Hohman Ave., 2 and 2 story headquarter operations bldg. $800,000. Hutton & Hutton, 521 Hohman Ave., archts. CD 5/7.

▲ **Mich., Traverse City** — HOSPITAL — B.A. 7/22 — State, A. N. Langius dir. State Bldg. Dpt., Lansing, 2 story, brick, steel tuberculosis unit, Traverse City State Hospital, $1,000,000. Plans deposit $25. Swanson Assoc., Long Lake Rd., Bloomfield Hills, archts. CD 2/7.

▲ **O., Cleveland**—POSTAL GARAGE and PARCEL POST ANNEX—B.A. 8/1—Owner c/o H. A. Urban, postal inspector, Cleveland Post Office, Zone 1, 3 story postal garage and postal post annex. $3,000,000. Extended date. CD 5/27.

Ill., Barrington—FACTORY—Bids Asked—Barco Mfg. Co., 1801 W. Winnemac St., Chicago, Ill., 100,000 sq. ft. factory with office, $750,000.

SOON LETS CONTRACT—BUILDINGS

▲ **Ill., Melrose Park**—WAREHOUSE—Ford Motor Co., Schaefer Bldg., Dearborn Mich., soon lets contract 2 story, 200,000 sq. ft. warehouse, $2,000,000.

▲ **Ind., La Porte**—FACTORY—Allis-Chalmers Mfg. Co., 814 S. 70 St., Milwaukee, 1, Wis., soon lets contract 220,000 sq. ft. factory addn., railroad trackage sewer lines, factory addn. $3,000,000. Chas. Cole & Son, 220 W. La Salle St., South Bend, archts. CD 4/16.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **OHIO**—State Hy. Dpt., T. J. Kauer, dir., Columbus, Zone 15.

V. N. Holderman & Sons, Inc., 890 Oakland Park Ave., Columbus, O., LB $1,966,811, est. $2,168,000. Type T-71 and structures 9.332 mi. U. S. Rt. 24-18.26-21.80), FJ-UJ-963 (1), Allen Co.; LB $2,401,800, est. $2,507,900, Type T-71 and structures 3.941 mi. USR 36-20.23; SR 16-7.76, F-570 (7), FU-450 (7), Coshocton Co.; LB $359,350, est. $449,800, Type T-71 and structure 0.989 mi. USR 250-(21.01-21.79), F-675 (2), Tuscarawas Co.;

Hinton Constr. Co., Celina, O., LB $122,086, est. $123,160, Type T-52 and structure 5.121 mi. CR 24, S-503 (2), Auglaize Co.; LB $318,503, est. $307,400, Type T-35 and structure 1.287 mi. SR 732-9.72, S-662 (2), Butler Co.;

Ralph Myers Contg. Corp., P. O. Box 230, Salem, Ind., LB $1,658,835, est. $1,801,300, Type T-71 structure 3.277 mi., SR 225-(6.41-9.9-11), F-116 (2), Brown Co.;

Meuuez & Skemp, Millersburg, O., LB $89,888, est. $120,640. Type T-71 and structure 0.08 mi. SR 513-1.76, S-1210 (2), Guernsey Co.;

Launder & Son, Inc., Station E Box 6, Toledo, O., LB $1,002,650, est. $955,920, Type T-71 and ostructures 6.055 mi. SR 2-(31.60-33.39); SR 2-0.00; SR 579-8.18, F-471 (4), F-219 (2), Lucas and Ottawa Counties;

Murray Constr. Co., P. O. Box 231, Waverly, O., LB $107,965, est. $133,100, Type T-32 and B-20 and structures 0.625 mi. SR 323-(12.33) (14.44) (15.33), S-1122 (1), Madison Co.;

George A. Trombley & Son, 2415 Byrne Rd., Toledo, O. LB $99,308, est. $111,280, Type T-35 and structure

0.719 mi. SR 579-1.70, S-156 (2), Ottawa Co.;
Great Lakes Constr. Co., Box 2278, Brooklyn Station, Cleveland, O., LB $191,464, est. $206,350, Type T-35 and structure 0.485 mi. SR 531-(13.73-14.07), Ashtabula Co.; LB $93,257, est. $88,300, Type T-71, 0.328 mi. USR 6-7.23, Cuyahoga Co.;
The Clinton Constr. Co., 135 N. South St., Wilmington, O., LB $72,583, est. $74,000. Type T-35, 0.879 mi. USR 68-31.66, Brown Co.;
Hatcher Bros., Inc., 116 Schoolway, Mingo Junction, O. LB $339,011, est. $375,750, Type T-35 on B-70 and structure 0.193 mi. USR 30-(17.80-17.98), Columbiana Co.;
Knox Paving Co., 801 Gas and Electric Bldg., Dayton, O. LB $256,000, est. $235,450, Type T-35, 3.947 mi. USR 40-(5.90-9.78), Montgomery Co.;
received no bids June 17, Type T-32 on B-20. 0.74 mi. SR 66-(8.58), (10.58), (14.73), S-113 (1), Defiance Co.;
cancelled bids to have been opened June 17, Type T-35, 2.851 mi. CR 9, S-854 (4), Franklin Co. Bids June 17. CD 6/5.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ John Jacobson Co., 1046 N. Main St., Akron, O. LB. Approx. $4,500,000. 220-bed HOSPITAL addn., and other facilities, AKRON, O. Bd. Trustees, Peoples Hospital, 256 W. Cedar St., Akron, O. Bids June 18. CD 5/9.
▲ Steinle-Wolfe Co., Fremont, O., CA. $1,824,165. general constr. several DORMITORIES, SHOPS, LIBRARY and POWER PLANT, at Marion Training School, MARION, O. State Dpt. P. Wks., 705 Ohio Depts. Bldg., Columbus, O. Bids May 7. CD 5/13, under LB.
Leo W. Schmidt Co., 9920 Granger Rd., Cleveland, O., CA $379,815, general constr. first unit, 1 story, 12-classroom brick on block elementary SCHOOL, Crest and Maple Rds. to be known as Severance A. Milliken School, CLEVELAND HEIGHTS, O. Bd. Educ., 1749 Lee Rd., Cleveland Heights, O. Bids June 18, awarded June 23. CD 5/16.
▲ Campbell-Lowrie-Lautermilch Corp., 400 W. Madison Ave., Chicago 6, Ill., CA, $1,800,000, 160,000 sq. ft. FACTORY unit addn., CHICAGO, ILL. Sunbeam Corp., 5600 W. Roosevelt St., Chicago, Ill. Olsen & Urbain, S S. Wabash St., Chicago 3, Ill., archts. Awarded June 9.
▲ Joseph J. Duffy Co., 4994 Elston Ave., Chicago 30, Ill., LB, $3,690,647, four bldgs., incl. 322 units, HOUSING, Harold L. Ickes Homes, CHICAGO, ILL. Chicago Housing Auth., 608 S. Dearborn St., Chicago 5, Ill. Bids June 13. CD 6/2.
▲ James Stewart Corp., 228 N. La Salle St., Chicago, Ill., CA, Total, $15,000,000, 1 story 400x810 ft., brick, concrete, steel PLANT addn., S. 6 St., SPRINGFIELD, ILL. Allis-Chalmers Mfg. Co., 3000 S. 6 St., Springfield, Ill. Everett F. Quinn Assocs., 134 N. La Salle St., Chicago, Ill., engrs. Hadley & Worthington, Myers Bldg., SPRINGFIELD, ILL., archts. Bids June 11. CD 6/10.
J. P. Cullen & Son, 330 E. Eastern Ave., Janesville, Wis., CA. $748,216, general contract St. Mary's HOSPITAL addns. and remodeling, RHINELANDER, WIS. Sisters of the Sorowful Mother, Rhinelander, Wis. Bids May 6. CD 5/31, under LB.
Hutter Constr. Co., 134 Western Ave., Fond du Lac, Wis., CA, $707,468, general contract PATIENT BLDGS. at Central State Hospital, WAUPUN, Wis. State Dept. P. Welfare, Madison, Wis. Bids June 4. CD 6/10, under LB.
O. W. Burke Co., 1032 Fisher Bldg., Detroit, Mich., CA $800,000. 2 story, bsmnt., brick, steel concrete parochial SCHOOL, CENTER LINE, MICH. St. Clement's Parish, Center Line, Mich. CD 5/19.
Alfred Smith Co., 721 E. Saratoga St., Ferndale, Mich. CA $855,000. 3 story, brick, steel Wilbur Wright Trade SCHOOL addn., DETROIT, MICH. City Bd. Educ., Griswold St., Detroit, Mich. Bids June 4. CD 5/28.
▲ O. W. Burke Co., 1032 Fisher Bldg., Detroit, Mich. CA $1,250,000. 1 story, brick DEPARTMENT STORE addn., incl. alterations to store front, interior walls, and openings, Grand River Blvd., DETROIT, MICH. Goodwin's Inc., 10735 Grand River Blvd., Detroit, Mich. Charles N. Agree, Inc., 1140 Book Bldg., Detroit, Mich., archts.
▲ Merrill-Threm Co., 20620 Harper St., Detroit, Mich. Owner Builds. $1,000,000. 1,000 brick single HOMES, Gratiot, Frazho and Fernwood Sts., ROSEVILLE, MICH.
▲ Lerner-Linden Constr. Co., 9940 Roselawn St., Detroit, Mich. CA est. $1,000,000. 2 story, bsmnt., brick, steel, concrete high SCHOOL, TAYLOR, MICH. Taylor Twp., Ray J. Pilon, clk. School Dist., Taylor, Mich. Bids May 22. CD 5/9.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
STREETS AND ROADS

July 11, Minnesota — July 15, 16, Texas

BIDS ASKED—BUILDINGS

▲ Tex., Fort Worth—B.A. 7/24—City, c/o W. O. Jones, mgr., City Hall, raw water conduit from Lake Worth to Holly Plant, $1,000.000. Plans deposit $25. Extended date. Freese & Nichols and Joe J. Rady, 407 Danciger Bldg., engrs. CD 6/18.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† NORTH DAKOTA—U. S. Eng, Fort LIncoln, Box 300, Bismarck,
Peter Kiewit Sons Co., 1024 Omaha Natl. Bank Bldg.,

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Omaha, Neb., LB, $976,853. 31.25 mi. roads and one bridge in western part of Fort Berthold Indian Reservation, Inv. 52-49, near Sanish, Dunn and McKenzie Counties. Bids June 20.

▲ **T. H. Vicars Co.**, Minot, N. D., CA, $618,888, 558 mi. distr. lines and 11.25 mi. conversion, Haakon, Jackson and Washabaugh Counties;

Evans Constr. Co., Early, Ia., CA, $832,041, 724 mi. rural distr. lines, Jones, Lyman and Stanley Counties, SOUTH DAKOTA. West Central Electric Co-operative, Murdo, S. D. Bids June 10. CD 5/22.

▲† **Glade Constr. Co.**, 403 Century Bldg., Fort Worth, Tex. LB. $1,775,400, Lot 1, eight 3-story, 25,100 sq. ft. concrete frame, masonry barracks, Inv. No. Eng. 41-243-52-112, KELLY AIR FORCE BASE, TEX. U. S. Eng., 606 Santa Fe Bldg., Galveston, Tex. Bids June 20. CD 5/14.

† **Shelby Constr. Co., Inc.**, 1108 Canal St., New Orleans, La., LB, $788,682, est. $810,906, six bachelor officers quarters bldgs. at Connally Air Force Base, ENG 41-443-52-47, WACO, TEX. U. S. Eng., 100 W. Vickery St. John Linn Scott, 406 W. 17 St., Austin, Tex., archt. Marvin C. Turner, Waco, Tex., engr. Bids June 20.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Moreland Constr. Co.**, 140 Laura St., Wichita, Kan. CA $1,301,665. FACTORY No. 36, WICHITA, KAN. Beech Aircraft Co., 6600 E. Central St., Wichita, Kan. CD 5/13, under LB.

▲† **R. P. Farnsworth & Co.**, 440 N. Foster Dr., Baton, Rouge, La., LB $1,864,220, Lot 1, six 3 story masonry part bsmnt. barracks; LB $2,036,000, Lot 2, seven 3 story masonry part bsmnt. barracks; LB $2,457,258, Lot 3, eight 3 story masonry part bsmnt. barracks, Inv. No. Eng 34-066-52-69, FORT SILL, OKLA. U. S. Eng., Box 61, TULSA 2, Okla. Bids June 17.

† **C. H. Leavell & Co.**, 1900 Wyoming St., El Paso, Tex., LB $691,494, guided missile LABORATORY and CLASSROOM BLDG., Serial No. Eng 29-005-52-31, at Fort Bliss, EL PASO, TEX. U. S. Eng., Box 1538, Albuquerque, N. M. Bids June 17.

▲† **T. C. Bateson Co.**, Irwin-Keasler Bldg. Dallas, Tex. LB, $2,012,748, est. $2,145,463, six 225-man BARRACKS, FORT HOOD, TEX. U. S. Eng., 100 W. Vickery St., Fort Worth, Tex. Bids June 19. CD 5/27.

H. H. Moeller, P. O. Box 35, Grayson St. Station, San Antonio, Tex., LB $887,000, 5 story, bsmnt., 112,000 sq. ft., brick, stone masonry Y.M.C.A. BLDG., rein.-con. fdn. and frame, swimming pool, etc., WACO, TEX. Young Men's Christian Assn., Waco, Tex. Bids June 20. CD 5/19.

▲† **Swinerton & Walberg Co.**, 2040 S. Navajo St., Denver, Colo., LB, $1,160,269, one 60x450 ft. and one 60x900 ft. WAREHOUSES; 1 story each one 61x134 ft., and one 82x148 ft. CHANGE HOUSES, at Rocky Mountain Arsenal, No. 25-066-52-128, DENVER, COLO. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids June 17. CD 6/2.

▲† **Olson Constr. Co.**, Railway Exchange Bldg., Denver, Colo., CA, $1,638,310, 120 underground concrete IGLOOS with roadways, and aprons, ENG 25-066-52-76, PUEBLO, Colo. U. S. Eng., 1790 Jackson St., Omaha, Neb. Bids May 9. CD 5/15, under LB.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS
STREETS AND ROADS
July 16, 17, California

BIDS ASKED—BUILDINGS

▲ **Calif., Sacramento**—PRINTING PLANT—B.A. 7/29—State Div. Architecture, P. Wks. Bldg., Sacramento; 257,000 sq. ft. state printing plant. $2,000,000. Plans deposit $75. Extended date. CD 5/22.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

IDAHO—State Hy. Dpt., Boise,

Hansen & Parr Constr. Co., N 1103 Calispel St., Spokane, Wash., LB, $585,041, 410 ft. concrete bridge and 112 ft. overhead across tracks and approaches. Benewah Co. CD 9/20/45.

† **C. W. Watkins & Son**, Box 1786, Boise, Idaho, CA, $508,246, aircraft maintenance shop, Mountain Home Air Force Base, Eng 45-165-52-31, MOUNTAIN HOME, IDAHO. U. S. Eng., City-County Airport, Walla Walla, Wash. Bids June 17. CD 5/14.

Gibbons & Reed Co., 259 West 3rd South St., Salt Lake City, Utah, LB $790,367, est. $905,920, construct new North-South Instrument Runway at Municipal Airport 1, SALT LAKE CITY, UTAH. Salt Lake City Corp., Irma Bitner, recdr., City and County Bldg., Salt Lake City, Utah, Bids June 17. D 6/3.

† **Birch-McLaughlin, Inc.**, Ford Bldg., Great Falls, Mont. LB, $995,847, apron paving and constr. utilities at Fairchild Air Force Base, Inv. 52-32, SPOKANE, WASH. U. S. Eng., City and County Airport, Walla Walla, Wash. Bids June 18. CD 5/15.

▲† **Manson Constr. & Eng. Co.**, 821 Alaskan Way, Seattle, Wash., CA, $1,075,000, reconstruct 3 piers at Naval Station, Spec. 30413, TACOMA, WASH. Yards & Docks Annex Navy Dpt., Arlington, Va. Bids June 12. CD 6/17, under LB.

OREGON—State Hy. Comn., Highway Bldg., Salem,

Porter W. Yett, 6500 N. E. Ainsworth St., Portland, Ore., CA, $507,000, paving, 31.6 mi. Sunset Hy., Washington and Clatsop Counties. Bids Dec. 21, awarded June 18. CD 1/3 under LB.

▲† **Power City Electric Co.**, N. 920 Howard St., Spokane, Wash., LB $1,021,675, construct Schedules 1, 2 and 4, Redmond-Klamath Falls 230 kv transmission line 154 mi., Inv. 6458, Deschutes and Klamath Counties, OREGON. Bonneville Power Admin., 827 N. E. Oregon St., Portland, Ore. Bids May 16. CD 5/7.

▲† **Winston Bros. Co. & Al Johnson Constr. Co.**, 1530 California St., Monrovia, Calif., CA, $6,067,354, est. $6,874,936, constr. Nimbus dam power plant and appurtenant works, Central Valley Proj., American River Division, Spec. DC 3713, CALIFORNIA, Bureau Reclamation, Dpt. Interior, Folsom, Calif. Bids June 5, awarded June 18. CD 6/10, under LB.

▲† **H. Earl Parker, Inc.**, Marysville, Calif., LB, $2,096,198, est. $2,005,925, earthwork, structures for lateral 6.2 Station 0/73.5 to 759 plus 65 and sublaterals for east section of Unit 1 on Madera distr. system Central Valley Proj. Spec. DC 3721, CALIFORNIA. Bureau Reclamation, Dpt. Interior, Friant, Calif. Bids June 17. CD 5/20.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Hugh Evans**, 1829 E. Indian School Rd., Phoenix, Ariz., Owner Builds, $2,000,000, 176 RESIDENCES, PHOENIX, ARIZ.

▲ **D. D. Castleberry**, 40 W. Illini St., Phoenix, Ariz., Owner Builds, $1,750,000, 115 RESIDENCES, PHOENIX, ARIZ.

▲ **Ralph Staggs**, 2312 N. 32 St., Phoenix, Ariz., Owner Builds. $3,000,000. 300 RESIDENCES, PHOENIX, ARIZ.

Malarkey & Moore, 9238 S. W. 17 St., Portland, Ore., CA, $965,784, 4 story HOSPITAL addn., LONGVIEW, WASH. St. John's Hospital, Longview, Wash. Bids June 12. CD 6/17, under LB.

W. G. Meyers & Son, Hyde Bldg., Spokane, Wash., CA $910,000, general contract 2 story HIGH SCHOOL, PASCO, WASH. School Bd., Pasco, Wash. Bids Apr. 4. CD 4/10, under LB.

Ross Powerhouse Contractors, Inc., Rockport, Wash., LB, $693,370, installing MECHANICAL STATION SERVICE UNITS and piping systems for Units 42, 43 and 44, Ross Power Plant, SEATTLE, WASH. City, County City Bldg., Seattle, 4, Wash. Bids June 18. CD 6/11.

▲ **Ross B. Hammond Co.**, Box 3901, Portland, Ore., CA $1,669,626, 4 story HOSPITAL wing, PORTLAND, ORE. Emanual Hospital, 2800 N. Commercial St. Portland, Ore., Bids Apr. 2, awarded June 16. CD 4/17, under LB.

▲ **J. E. Burrell & Sons**, 525 San Francisco Ave., Long Beach, Calif., CA, $1,067,750, general contract, Southern California RECEPTION CENTER and CLINIC IN-

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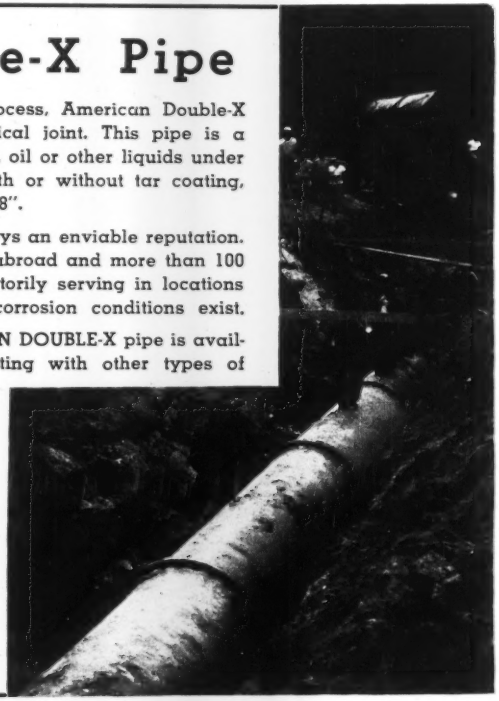

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STITUTON bldgs. for California Youth Auth., NORWALK, CALIF. State Div. Architecture, P. Wks. Bldg. Sacramento, Calif. Bids June 5, awarded June 16. CD 6/11, under LB.

ALASKA

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **Max J. Kuney Co.**, N. 120 Ralph St., Spokane, Wash. LB $2,850,000, est. $3,131,608, .. conc. paving 350,000 sq. yd. aircraft parking apron with 20x30 ft. laboratory bldg., Inv. Eng 95-507-52-22, Elelson Air Force Base, ALASKA. U. S. Eng., Anchorage, Alaska. Bids June 20. CD 5/22.

BUILDINGS

LOW BIDS AND CONTRACTS

† **Johnson Constr. & Maintenance Co.**, Anchorage, Alaska, CA. $541,450, Woodland Park Elementary SCHOOL, ANCHORAGE, ALASKA. Alaska P. Wks., Dpt. Interior, Juneau, Alaska. Bids June 4. CD 6/10, under LB.

† **Reed & Martin**, Fairbanks, Alaska, CA $600,000, est. $550,000. rein.-con., steel, masonry elementary SCHOOL, Proj. Aaa 50-A-49, FAIRBANKS, ALASKA. Alaska P. Wks., Dpt. Interior, Juneau, Alaska. Bids May 7. CD 5/13, under LB.

U. S. POSSESSIONS

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Hawaiian Dredging Co. Ltd.**, P.O. Box 3468, Honolulu, Hawaii, LB. $3,497,000. 45 separate APARTMENTS, with combined total of 400 dwelling units, admin. bldg., incl. installation work, all utilities, etc., "Kalihi Valley" HONOLULU, T. H. Hawaii Housing Auth., Lee Mace, Executive Dir., Lolani Palace Grounds, Honolulu, Hawaii. Bids June 6. CD 5/5.

CANADA

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Burns & Dutton Concrete & Constr. Co., Ltd., 5440 First St. W., Calgary, Alta., CA, $800,000 concrete reservoir in western basin to contain 18 million gal. water, 400 ft. square, earth cover over concrete top, CALGARY, ALTA. City, City Hall, Calgary, Alta. Awarded June 19. CD 4/10/51.

QUEBEC—Province of Quebec, Dpt. P. Wks., Quebec City,

Quemont Constr. Inc., 285 W. Bernard Ave., Montreal, Que. CA. $500,000, rein.-con. bridge over Montmorency River, Ste. Anne de Beaupre. O. Desjardins, c/o owner, engr.

▲ **Page-Hersey Tubes Ltd.**, St. Catherines, Ont., CA, Approx. $1,250,000, 56 mi., 2,016 tons 6 in. pipe crude oil pipe line from Milden to H-Way Refineries at Saskatoon, SASKATCHEWAN. Saskatoon Pipe Line Co. Ltd., Regina, Sask. Petrol-Structors, Calgary, Alta., engrs.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Diamond Constr. Co. Ltd.**, 60 Carleton St., Fredericton, N. B., CA, $1,047,500, two 2 story pavilions linked with connecting passage brick, tile, steel, concrete slab, rein.-con. Provincial HOSPITAL, CAMPBELLTON, N. B. New Brunswick Dpt. P. Wks., Parliament Bldgs., Fredericton, N. B. Kearns & Bromley, 176 Main St., Wolfville, N. S., engrs. Ross, Patterson, Townsend & Fish, 110 St. Catherine St. W., Montreal, Que., archts. Awarded June 28. CD 11/27/45.

▲ **Hamilton Constr. Co.**, 1068½ Barton St., Hamilton, Ont., CA, Approx. $800,000, 80 HOUSING units;

Grisenthwaite Constr. Co., Ltd., 637 Parkdale Ave. N., Hamilton, Ont., CA, Approx. $2,000,000, 200 houses;

Head Constr. & Supply Co., Ltd., 635 Tecumseh St., Windsor, Ont., CA, Approx. $1,400,000, 140 housing units;

Medway Constr. Co., 380 Cedar St., London, Ont., CA Approx. $500,000, 50 housing units at former Hamilton Airport site, HAMILTON, ONT. Central Mortgage & Housing Corp., 441 Queen's Quay W., Toronto 2, B. Ont. Bids May 29. CD 5/21.

▲ **Comstock Co. Ltd.**, 206 Laird Dr., Leaside, Ont., CA $3,000,000, electrical contract incl. 26,000 volt sub-station and all unit sub-stations, power and lighting distr., complete, lighting of plant and offices, outdoor lighting and services, fire alarm and signaling systems for ASSEMBLY PLANT, OAKVILLE, ONT. Ford Motor Co. of Canada Ltd., 2780 Sandwich St., Windsor, Ont. J. M. Cochrane, c/o owner, engr.

▲ **Principal Investments Ltd.**, 67 Richmond St. W., Toronto, Ont., Separate Contracts, Approx. $1,000,000 converting 7 story apartment hotel, 600 University Ave., into an OFFICE bldg. TORONTO, ONT.

Wilfrid Legare, Inc., 395 Chemin St., Ste. Foy, Quebec City, Que., CA, $600,000, 2 story, bsmt. SCHOOL addns. and 6 story, MONASTERY addns., CHICOUTIMI, QUE. Sisters Antoniennes de Marie, Jacques Cartier St. E., Chicoutimi, Que. Larose & Larose, 1480 Blvd. St. Joseph E., Montreal, Que., archts.

(Proposal Advertisements see pp. 98 to 100)

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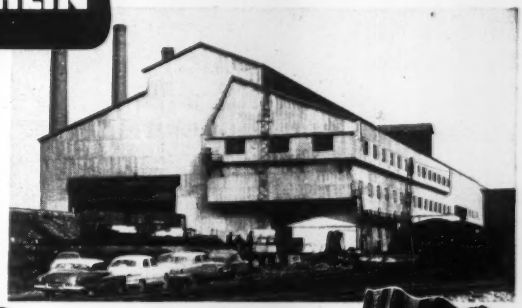

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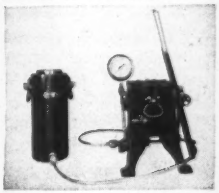

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Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

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HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

MAINE—State Hy. Comn., State House, Augusta.
Farrin Bros. & Smith, Brighton, Me. CA. $145,812. b. conc. 2,443 mi. F.A. Proj. S 0210 (4), Dixmont;
The Bridge Constr. Corp., 341 Water St., Augusta, Me. CA. $259,610. b. conc. 5.837 mi. State Secondary Proj. No. 110, Winslow-Vassalboro. Bids June 18. CD 6/12.

▲ MASSACHUSETTS—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston.
A. V. Taurasi Co. Inc., 139 Jacques St., Somerville, Mass. CA. $2,780,313, est. $2,700,000. hy. and bridge constr., Fl-62 (7), Newbury, West Newbury.

▲ MASSACHUSETTS—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston.
Gil Wyner Co., Inc., 12 Newland St., Malden, Mass. CA. $2,366,260, est. $2,100,000. hy. auto Rte. 128, U-331 (10), Essex, Gloucester, Manchester. CD 6/16, under LB.

▲ MASSACHUSETTS—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston.
Bethlehem Steel Co., 75 Federal St., Boston, Mass. CA. $2,119,649, est. $1,500,000. Contr. C-2A steel superstructure for elevated hy. portion J. F. Fitzgerald Expressway, Boston. CD 6/16, under LB.

MASSACHUSETTS—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston.
San Vel Contg. Co., Ayer Rd., Littleton, Mass. LB. $344,874, est. $412,000. state hy., bridge reconstr., Upton. Bids June 18. CD 6/4.
Thomas Bros., 267 Wareham St., Middleboro, Mass. LB $87,688, est. $90,000. taxiway and exten. runway, FALL RIVER, MASS. City, Municipal Airport, 4381 N. Main St., Fall River, Mass. Fay, Spofford & Thorndike, 11 Beacon St., Boston, Mass., engrs. CD 12/31/46.
D'Onofrio Constr. Co., 65 Stiles St., New Haven, Conn., CA. $629,000. Contr. IIV, enlarge sewage disposal plant, STRATFORD, CONN. Town Town Hall, Stratford, Conn. Bids May 15, awarded June 12. CD 5/28, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

T. W. Cunningham, Inc., 38 Columbia St., Bangor, Me. CA. $519,256, est. $500,000. HIGH SCHOOL, Stillwater Ave. OLD TOWN, ME. Old Town High School Dist., City Offices, Old Town, Me. CD 6/3, under LB.
Gil Wyner Co., Inc., 12 Newland St., Malden, Mass., CA. $789,123. HOUSING, Proj. N.H. 3-1-Toland and Whittier Sts., DOVER, N. H. Dover Housing Auth., Municipal Bldg., Dover, N. H. Bids May 6. CD 5/16, under LB.
▲† Jefferson Constr. Co., 75 First St. Cambridge, Mass. LB $1,497,198, Item 1; $1,369,198, Item 2; $1,315,968, Item 3; $1,215,000, Item 4, STORAGE BATTERY BLDG., Naval Shipyard, NAV 29525, Spec. 30307, PORTSMOUTH, N. H. Ps. Wks. Office, First Naval Dist., 495 Summer St., Boston, Mass. Bids June 20. CD 6/23.
White Constr. Co., 134 Newbury St., Boston, Mass. CA. $650,903, est. $500,000. Elementary SCHOOL, River St., Billerica, MASS. Town, R. Myron Davis, chn. School Bldg. Comn., Boston Rd., Billerica, Mass. CD 5/27, under LB.
Francis Harvey & Sons, Inc., 141 Dewey St., Worcester, Mass. LB $753,153, est. $750,000. JUNIOR HIGH SCHOOL GYMNASIUM, HIGH SCHOOL addn., Recreation Field, LB $465,551, est. $400,000. elementary SCHOOL, Recreation Field, UXBRIDGE, MASS. Town, School Dpt., Walter McCloskey, supt., Capron St., Uxbridge, Mass. Bids June 12. CD 5/23.
† U. S. Eng., 857 Commonwealth Ave., Boston 15, Mass. cancelled bids to have been opened about June 25. Organized Reserve Corps ARMORY, motor vehicle STORAGE SHED. Eng. 19-016-52-74, HARTFORD, CONN. CD 5/27.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION

N. Y., Farmingdale—ELECTRICAL DISTR. SYSTEM—B.A. 7/17—Bureau Contracts & Accounts, The Governor Alfred E. Smith State Office Bldg., Albany, electrical distr. sys. Long Island Agricultural & Technical Institute. Plans deposit $20. CD 9/27/46, under Public Buildings.
† N. Y., Westhampton—HOUSING—B.A. 7/22—U. S. Eng., 80 Lafayette St., New York. Zone 13. family housing at Suffolk County Air Force Base. $88,000. CD 6/4 under LB.

BIDS ASKED—BUILDINGS

Del., New Castle—SCHOOL—B.A. 7/9—New Castle Special School Dist., New Castle Manor Park Elementary School. $600,000. E. William Martin, 830 West St., Wilmington, Del. CD 3/18.
N. J., Woodbine—NURSING UNIT—B.A. 7/9—N. J. Dpt. Agencies & Institutions, State House, Trenton, tuberculosis nursing units, $500,000. Extended date. Vincent G. Kling, 917 Corinthian Ave., Phila., Pa., archts. CD 6/3.
N. Y., New York—HOUSING IMPRVS.—B.A. 7/9—New York City Housing Auth., 63 Park Row, Zone 38, construct street and yard imprvs.; topsoil and planting for Throgg's Neck Houses, Proj. No. NY-5-15, in area bounded generally by Balcom Ave., Randall Ave., E. 177 St., Calhoun Ave., Dewey Ave., Swinton Ave. and Sampson Ave., Bronx Boro. Plans deposit $25 each. Extended date. CD 5/22.
▲† N. Y., Romulus—WAREHOUSES, etc.—B.A. On Or About 7/23—U.S. Eng., 80 Lafayette St., New York, Zone 13, two 200x1,000 ft. warehouses, construct pump house and reservoir, for General Service Admin., Seneca Ordnance Depot, ENG 30-075-52-778. $1,-700,000. Plans deposit $10.
† N. J., Fort Monmouth—POST COMMUNICATIONS—B.A. 7/24—U. S. Eng., 80 Lafayette St., New York, 13, N. Y. post communications bldg., $640,000. Plans deposit $15. Extended date. CD 3/13.
Pa., Essington — LABORATORY — Bids Asked—Westinghouse Electric Co., Lester, laboratory bldg. and boiler house exten. $300,000. United Engineers & Constructors, Inc., 1401 Arch St., Phila., engr. and archt. CD 8/6.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ NEW YORK—Bureau Contracts & Accounts, The Governor Alfred E. Smith State Office Bldg., Albany.
Merritt-Chapman & Scott Corp., 17 Battery Pl., New York 4, N. Y. CA. $1,572,849, driving piles, constructing cofferdams and pier bases for ten easterly spans of the Tappan-Nyack Bridge over the Hudson River, Westchester Co.;
The Tomlinson Constr. Co. Ltd., Weedsport, N. Y., CA. $1,152,471, construct 3-span steel deck girder bridge, misc. work 1.56 mi. Lake Ontario State Parkway, Monroe Co.;
Mass.—Northern Constr. Corp., 588 Essex St., Lawrence, Mass., CA. $864,331, four highway grade separation structures, misc. work on sect. of New York State Thruway from Fly Rd. easterly to North Manlius Rd., Onondaga Co. Grand total $3,169,651. Bids May 29. CD 6/3, under LB.
▲ NEW YORK—Bureau Contracts & Accounts, The Governor Alfred E. Smith State Office Bldg., Albany.
Frank E. Antolick, Schaghticoke, N. Y. CA. $634,928, est. $640,000. Corinth Bridge and approaches (Co. Rd.). 0.34 mi., FASS 52-19, Saratoga and Warren Counties;
Tully & DiNapoli, Inc. and Gull Contg. Co., Inc., 33-15 Lawrence St., Flushing, N. Y. CA. $1,981,697, est. $2,350,000. 0.7 mi. Major Deegan Expressway Extens., Cont. 4, FAMDE 52-3, FAMDEG 52-4, Bronx Co.;
A. E. Ottaviano, Inc., 80 Brook St., Croton-on-Hudson, N. Y. CA. $759,786, est. $812,000, 1.01 mi. Palisades Interstate Parkway, Pts 1 and 2, PIP 52-1, Orange Co. Grand total $3,376,411. Bids May 15. CD 5/19, under LB.
▲ NEW YORK—Bureau Contracts & Accounts, The Governor Alfred E. Smith State Office Bldg., Albany.
Northampton Constr. Corp., Westhampton Beach, N. Y., CA. $742,740, est. $819,000. stone jetty, beach protection, Shinnecock Inlet, Suffolk Co. Bids May 15. CD 5/19 under LB.
▲ NEW YORK—Bureau Contracts & Accounts, The Governor Alfred E. Smith State Office Bldg., Albany.
Draicchio & Caradori Constr. Co., Inc., 3 Lombardy St., Lancaster, N. Y. CA. $606,581, est. $625,000, 3.96 mi., Silver Creek Village: Central Ave., SH 9240, Southwestern Blvd., Pts 9 and 10, SH 1852, Irving-Silver Creek Sect., SH 1452, Silver Creek connection, RC 52-18, SH 52-4, Chautauqua Co.;
Triple Cities Constr. Co. and N. R. Corbisselo, Inc., 17 Tompkins St., Binghamton, N. Y. CA. $1,662,735, est. $1,665,000, 9.3 mi. New York City Board of Water Supply Roads 4, 6, and 7, (Pepaction Reservoir), 52-BWS—4-6-7, Delaware Co. Bids May 15. CD 5/19, under LB.
Atlantic County Constr. Co., Virginia and Mediterranean Aves., Atlantic, N. J. LB $203,252, storm water drainage sys., repaving Chelsea Heights sections, ATLANTIC CITY, N. J. Bd. City Comrs., Atlantic City, N. J. George S. Swinton, city engr.
A. H. Lupton Jr., Inc., Bridgeton, N. J. LB $70,940. water mains, various locations, BRIDGETON, N. J. City, Bridgeton, N. J. William Kirby, Bridgeton, N. J., city engr.
Oxford Constr. Co., 173 W. Roosevelt Blvd., Phila., Pa. LB $672,310. Southwest Sewage Disposal Plant addns., PHILA., Pa. Dpt. Procurement, City Hall Annex, Phila., Pa. CD 3/11/46.
Union Paving Co., Broad and Stiles Sts., Phila., Pa., LB $127,984. street reconstruction and paving various streets, UPPER DARBY, PA. Upper Darby Twp. Comrs., Municipal Bldg., Upper Darby, Pa. J. Earl Kirk, c/o owner, twp. engr.

BUILDINGS

LOW BIDS AND CONTRACTS

Day & Zimmerman, Inc., 1700 Sansom St., Phila., Pa. CA $500,000. 1 story, 176x240 ft., steel, concrete brick, block mfg. PLANT, MOORESTOWN, N. J. R. C. A. Victor Corp., Front and Cooper Sts., Camden, N. J. Norman Hulme, 1524 Chestnut St., Phila., Pa., archt. Louis T. Klauder Assoc., Lincoln Liberty Bldg., Phila., Pa., engrs.
▲† Hackart Constr. Co., Inc., 351 W. 54 St., New York, N. Y. CA. $3,144,000. Bid 2, constr. WAREHOUSES 1, 2, 3 and 4, Veterans Administration Supply Depot, Proj. No. 28-110, SOMERVILLE, N. J. General Services Admin., P. Bldgs. Service, General Services Bldg., Wash., 25, D. C. Bids May 23. CD 5/6.
All State Constr. Co., 84 Lincoln Ave., Trenton, N. J. CA. $84,000. WAREHOUSE, GARAGE and OFFICE, TRENTON, N. J. Eastern Scrap & Salvage Corp., 55 Mulrhead Ave., Trenton, N. J.
F. K. Campion, 1905 Spring Garden St., Phila., Pa. LB $435,342, COURT HOUSE annex addn. and GARAGE addn., sidewalks, etc., MEDIA, PA. Delaware Co. Comrs., Media, Pa. Bids June 3. CD 5/8.
John A. Robbins Co., Inc., 10 S. 18 St., Phila., Pa., CA $300,000. SYNAGOGUE, PHILA., PA. Temple Israel of Wynnefield, 59 St. and Drexel Rd., Phila., Pa., archt.
Sam Himelfarb & Son, 5424 Euclid St., Phila. Pa., Separate Contracts, approx. $350,000. RESIDENTIAL DEVELOPMENT, St. Vincent St., PHILA., PA. S. S. Robbins, 5644 Diamond St., Phila., Pa., archts.
Frank Glassman & Co., 1338 E. Yerkes St., Phila., Pa., CA $450,000. APARTMENT, Woodbine Ave. east of Bryn Mawr Ave., PHILA., PA. Woodbine Park Apartments, Inc., c/o general contractor. G. Harold Murphy, 1618 Sellers St., Phila., Pa., archt.
William F. Lotz, Adams and Orthodox Sts., Phila., Pa. CA. $387,404, HOME addns., alterations, PHILA., PA. Lutheran Home for Orphans & Aged, 6950 Germantown Ave., Phila., Pa. CD 10/20/50.
R. M. Shoemaker Co., 1619 Sansom St., Phila., Pa., CA $709,500. RESEARCH BLDG., PHILA., PA. Children's Hospital of Phila., 1740 Bainbridge St., Phila., Pa. Bids May 27. CD 5/21.
Bendo Homes, Inc., 1817 S. 4 St., Phila., Pa., Separate Contracts. Approx. $350,000. RESIDENTIAL DEVELOPMENT, Diston St., PHILA., PA. I. W. Levin, 1531 Belmont Ave., Phila., Pa., archt.
Frank H. Wilson Co., 125 Coulter Ave. Ardmore, Pa. CA. $300,000. LOCKER bldg. and CANTEEN bldg., PHILA. PA. Gulf Oil Co., 30 St. and Penrose Ave., Phila., Pa. R. C. Roetner Co., c/o owner, ch. engr. CD 8/27/46.
Gaylord Builders, Inc., 12 Bennington Rd., Havertown, Pa., CA. $400,000. 1 story, 180x200 ft., brick, steel MANUFACTURING BLDG., PHILA., PA. Henry Berman, 2914 Richmond St., Phila., Pa. CD 6/2.
▲ Paul W. Glenn, Inc., Sharon, Pa., CA. Approx. $1,000,000. approx. 200,000 sq. ft. MILL to mfg. high alloy and all-alloy tubing on Wheatland-Hubbard Hy., near SHARON, PA. Shenango Agaloy Tube Co., Sharon, Pa. Awarded June 12. CD 2/14.
American Buildings Co., 1127 Land Title Bldg., Phila., Pa. Separate Contracts. $300,000. RESIDENTIAL DEVELOPMENT, Latimer Place West, WILMINGTON, DEL.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION

† Fla., Orlando—PHYSIOLOGICAL TRAINER BLDG., etc.—B.A. 7/22—U. S. Eng., P. O. Box 4970, Jacksonville, physiological trainer bldg., radar trainer bldg. and airmen's club at Pinecastle Air Force Base, Eng. 08-123-52-170. CD 1/31/51.
† N. C., Camp Lejeune—BOILER PLANT, etc.—B.A. 7/24—Sixth Naval Dist., Box 365, Naval Base, Charleston, S. C. boiler plant and steam distr. sys. at U. S. Marine Corps Air Facility, Peterfield Point, NOY 71507, Spec. 32263. Plans deposit $20.
† N. C., Camp Lejeune—SUBSISTEREE BLDG.—B.A. 8/25—Sixth Naval Dist., Box 365, Naval Base, Charleston, S. C. enlisted men's subsisteree bldg., warehouse and gate house at U. S. Marine Corps Air Facility, Peterfield Point, NOY 71506, Spec. 32262. Plans deposit $40.

BIDS ASKED—BUILDINGS

S. C., Lamar—HIGH SCHOOLS—B.A. 7/9—Darlington Co. School Dist., Darlington, Spaulding High School, and Lamar High School. Approx. $300,000 each. Plans deposit $50. each. James & Durant, 128 E. Liberty St., Sumter, archts.
† N. C., Fort Bragg—WAREHOUSE—B.A. About 7/30—U. S. Eng., 308 Customhouse, Wilmington, Part A, 80,000 sq. ft. concrete masonry with either steel frame or wooden frame (alt.) warehouse bldg; Part B, construct outside electrical work, Serial No. Eng 31-075-52-39. CD 7/19/51.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† Claussen—Lawrence Constr. Co. 1394 Gwinnet St., Augusta, Ga., CA. $63,417, resurfacing parking lots and driveways, CAMP GORDON, GA. Purch & Contg. Office, Camp Gordon, Ga. Bids May 15. CD 4/25.
† W. D. Owens Constr. Co., 3800 26 St. N., St. Petersburg, Fla., LB. $1,433,348, rehabilitation of water, sewer and power systems, CAMP BLANDING, FLA. U. S. Eng., P. O. Box 4970 Jacksonville, Fla. Bids June 17. CD 5/23.
† Terry & Wright Inc., W. 8 St., New Albany, Ind. LB $2,465,632; est. $2,346,297. Sect. C, flood wall Covington, Kenton Co., CIVENG 15-029-52-105, KENTUCKY, U. S. Eng., 830 W. Broadway, Louisville 3, Ky. Bids June 18. CD 5/16.

BUILDINGS

LOW BIDS AND CONTRACTS

Forbes & Taylor, 361 Building Springs Dr., Lexington, Ky. LB $315,500. Russell Elementary SCHOOL, LEXING-

TON, KY. City, Lexington, Ky. Obadiah Bass, 222 E. Vine St., Lexington, Ky., archt. Bids June 5.

MIDDLE WEST

BIDS ASKED—BUILDINGS

Wis., Green Bay—WAREHOUSE—B.A. 7/8—Red Owl Stores, Inc., 215 Excelsior Ave., Hopkins, Minn., general contract 1 story part bsmnt., 360x840 ft. warehouse. Lang & Raugland, 802 Wesley Temple Bldg., Minneapolis, Minn., archts. CD 5/14.

▲ **O., Akron**—HIGH SCHOOL—B.A. 7/15—Bd. Educ., Hazel Fleek, clk., 70 N. Broadway, Roswell Kent Junior High School, Hammel and Barbara Sts. $1,700,000. Plans deposit $35. W. B. Hubb, 1050 N. Main St., proj. archt. Edwin E. Bliss, c/o owner, archt. CD 11/16/50.

O., Youngstown—MOTEL—Bids Asked—Sam Greenberger & Assoc., c/o Community Circuit Theaters, Great Lakes Life Bldg., Cleveland, 2 story, 109x300 ft., brick 63 unit motel, 525 Wick Ave. Maxwell H. White, Finance Bldg., Cleveland, archt. CD 6/12.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† **Fitzsimons & Connell Dredge & Dock Co.**, 10 S. La Salle St., Chicago, Ill., CA, $67,000, Calumet River dredging and removal of timber and concrete bulkhead Chicago, ILLINOIS. U. S. Eng., 520 Merchandise Mart, Chicago, 54, Il. Awarded June 16.

ILLINOIS—State Div. Hys., Springfield,

Arcole Midwest Corp., 3225 Main St., Evanston, Ill., CA, $556,000, bit. resurf. 22.37 mi. U. S. 45, Effingham, Shelby, Cumberland and Coles Counties, Bids May 16, awarded June 18. CD 5/22, under LB.

ILLINOIS—State Div. Hys., Springfield,

Arcole Midwest Corp., 3225 Main St., Evanston, Ill., CA, $779,280, c. conc. base course w/d'n. and c. conc. base course 22.04 mi. Marked U. S. 45, Effingham, Shelby and Cumberland and Coles Counties. Bids June 6, awarded June 18. CD 6/11, under LB.

▲ **Indiana & Michigan Electric Co.**, 122 E. Wayne St., Fort Wayne, Ind. Own Forces. Est. $1,000,000. addnl. sub-stations at Van Buren, Dunkirk and Union City, build line from Lawrenceburg to Union City and branch to Richmond, INDIANA.

▲ **WISCONSIN**—State Hy. Comn., Madison,

J. R. Griffith Co., 1500 9 St., Racine, Wis. LB $384,423. Contr. 1 grade drain, base course 1.756 mi. Hartland-Pewaukee-Milwaukee (Pewaukee relocation) Rd., Proj. F 06-1 (23), U. S. Hy. 16 and S. T. Hy. 190, Waukesha Co.;

John F. Bloomer Co., Appleton, Wis. LB $88,571. Contr. 1 grade drain 4.448 mi. S. T. H. 139—Florence Rd. S. T. Hy. 70, Proj. S 0810 (3), Florence Co.;

Linnan Constr. & Engineering, Wauwatosa, Wis. LB $185,817. Contr. 1, c. conc. 0.783 mi. Glenview Ave. (Harwood Ave.-Blue Mound Rd. Section) City of Wauwatosa, S. T. Hy. 181, Proj. U 5729 (3), Milwaukee Co.;

Stack Constr. Co., W. Burleigh St., Milwaukee, Wis. LB $316,813. Contr. 1 b. conc. 1.678 mi. West Layton Ave. U.S.H. 41-S.T.H. 38 Section, C.T. HY. Y, Proj. 0830 (3), Milwaukee Co;

E. & C. Co., 819 E. Burleigh St., Milwaukee, Wis. LB $237,875. Contr. 1, c. conc. 0.64 mi. South 84 St. and North Glenview Ave. (West Adler St.-West Blue Mound Rd. Section) city of Milwaukee and City of Wauwatosa, S.T. Hy. 181, Proj. U 5729 (2), Milwaukee Co.;

The White Constr. Co., 710 Plankinton Ave., Milwaukee, Wis. LB $76,291. Contr. 1, c. conc.—sheet asph. 0.519 mi. North Lake Dr. (City of Milwaukee), S.T. Hy. 32, Proj. T 5701 (1), Milwaukee Co.;

Schuster Constr. Co., Denmark, Wis. LB $410,698. Contr. 1, c. conc. 2.756 mi. Sturgeon Bay-Pauls Corners Rd., S.T. Hys. 42 and 57, Proj. T 01-5 (5), Door Co.;

Universal Engineering Co., Medford, Wis. LB. $368,593. Contr. 1, c. conc. 1.87 mi. East Fourth St. (City of Marshfield) C. T. Hy. H, Proj. U 5502 (1), Wood Co.;

Ashworth & Son Co., St. Louis Park, Minn. LB $126,687, Contr. 1, b. conc. 0.929 mi. North Broadway and Pine St. City of Menomonie, U.S. Hy. 12, Proj. T 3361 (1), Dunn Co.;

S. J. Groves & Sons Co., Wesley Temple Bldg., Minneapolis, Minn. LB. $118,263. Contr. 1, b. conc. 1.503 mi. West Main, Polk, Second, First, Mill and East Main Sts., (City of Merrill) S.T. Hy. 64, Proj. T 013 (1), Lincoln Co.;

Mathy & Thornton Constr. Cos., 508 Hoeschler Bldg., LaCross, Wis. LB. $209,996. Contr. 1, b. conc. 1.601 mi. Superior Ave. (City of Tomah) S.T. Hy. 131 and U.S. Hy. 12, Proj. T 0327 (1) and T 06-3 (7), Monroe Co.;

McLean-Astleford Co., 400 W. 78 St., Minneapolis, Minn. LB. $232,750. Contr. 1, drain base course 5.701 mi. Park Falls-Manitowish Rd., S.T. Hy. 182, Proj. S 0701 (4), Price Co.;

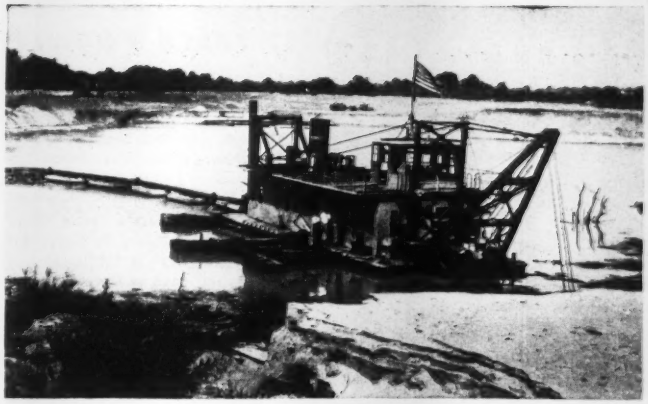
H. F. Radant, Inc., Eau Claire, Wis. LB. $123,635. Contrs. 1 and 3, grade, base course 2.012 mi. Marshfield-Abbotsford Rd. Spruce St. (village of Abbotsford,) Washington St. (City of Thorp), S.T. Hys. 13, 29 and 73, Proj. T 04-4 (9), T 020-1 (8), T 020-2 (3) and T 047-(5), Clark and Marathon Counties. Bids June 17. CD 6/2 and 6/5.

H & H Constr. Co., 1722 W. Forest Home Ave., Milwaukee 4, Wis. CA $38,153. lay water mains in W. Bennett Ave., MILWAUKEE, WIS. Lloyd D. Knapp, city engr. Bids June 11, awarded June 13.

BUILDINGS

LOW BIDS AND CONTRACTS

Felix Pesa & Sons Constr. Co., 745 Andrews Ave., Youngstown, O., CA. $537,859, general constr. to widen and enlarge Woodrow Wilson HIGH SCHOOL,



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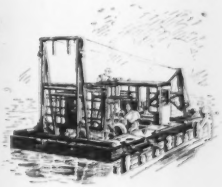

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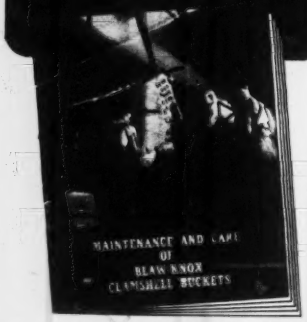

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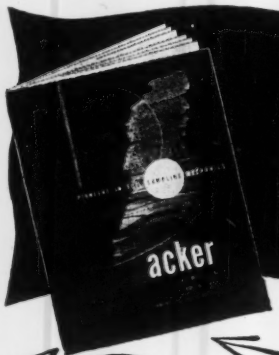

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YOUNGSTOWN, O. Bd. Educ., 20 W. Wood St., Youngstown, O. Bids June 10. Awarded June 16. CD 5/19.

Fairhaven Homes, Inc., 3300 Manor Court, Indianapolis, Ind. Owner Builds. $400,000. homes, INDIANAPOLIS, IND.

Gerhardt F. Meyne Co., 7 S. Dearborn St., Chicago, 3, Ill., CA. $300,000, PLANT top addn. and interior conversion, CHICAGO, ILL. Wilson-Jones Co., 3300 W. Franklin St., Chicago, Ill. Friedman, Alschuler & Sincere, 223 Jackson Blvd., Chicago, 6, Ill., archts. Awarded June 12.

† M. H. Wolfe & Co., 20 and Adams St., Granite City, Ill., CA. $250,000, two OPEN SHED WAREHOUSES and appurtenances, Granite City Engineer Depot, GRANITE CITY, ILL. U. S. Eng., 520 Merchandise Mart, Chicago, 54, Ill. Bids May 14. CD 4/16.

Chas. B. Johnson & Son, 122 S. Michigan Ave., Chicago, 3, Ill., CA. $900,000, 2 and 3 story, intermediate SCHOOL, HIGHLAND PARK, ILL. School District 108, 495 Lincoln Ave., Highland Park, Ill. Awarded June 12. CD 6/9, under LB.

E. H. Marhoefer & Co., 505 N. La Salle St., Chicago, 10, Ill., CA. $300,000, NURSES HOME, HINSDALE, ILL. Hinsdale Sanitarium & Hospital, 12 N. Oak St., Hinsdale, Ill. Fugard, Burt, Wilkinson & Orth, 520 N. Michigan Ave., Chicago, 4, Ill., archts. Awarded June 9.

P. Rasmussen & Son, 501 Iowa St., Oshkosh, Wis. CA. $450,000. 2 story, bsmnt., 79x228 ft. grade SCHOOL, APPLETON, WIS. St. Mary's Catholic Congregation, 522 W. 7 St., Appleton, Wis. Bids June 3. CD 5/27.

† Carl E. Mohs & Assoc., 2550 University Ave., Madison, Wis. CA. $87,908, motor maintenance bldg., guard house, Eng. 47-103-52-12, MADISON, WIS. U. S. Eng., P.O. Box 744, 428 Federal Bldg., Milwaukee 1, Wis. Bids May 15.

W. W. Oeflein, Inc., 5345 N. Hopkins St., Milwaukee 9, Wis. CA. $300,000. 1 story, 102x118 ft. reinf. con., brick TELEPHONE EXCHANGE BLDG., WEST ALLIS, WIS. Wisconsin Telephone Co., 722 N. Broadway, Milwaukee 2, Wis. Wm. G. Herbst & Assoc., 1249 N. Franklin Pl., Milwaukee 2, Wis., archts.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

† Tex., Ellington Field Air Force Base—GCA FACILITIES—B.A. 7/16—U. S. Eng., 606 Santa Fe Bldg., Galveston, tactical GCA facilities, incl. hardstand, access roads, underground transformer vault, underground primary electric line, etc. Inv. No. 41-243-52-130. Approx. $100,000. CD 6/29/52.

South Dakota—SUB-STATION EQUIPMENT—B.A. 7/17—Bureau Reclamation, Dpt. Interior, Bldg. 53, Denver Federal Center, Denver, Colo., furnishing, del. f.o.b. cars shipping point or f.o.b. cars Rapid City, one 15,000-kva, 220,000 delta to 4,160 grounded wye/2,400 volt, 3-phase, 60-cycle, oil-immersed, self-cooled with provision for future forced-air-cooling outdoor transformer, with automatic tap-changing-under-load equipment in the 4,160 volt windings, and with 3 single-pole lightning arresters for 220,000-volt delta circuits, mounted on the transformer tank, for service with an elevation of approx. 3,240 ft. above sea level in the Weaver Sub-station, Transmission Div., Missouri River Basin Proj., Inv. No. DS-3741.

BIDS ASKED—BUILDINGS

Tex., Dallas—THEOLOGY—B.A. 7/25—Southern Methodist University, Mockingbird Lane, 3 story, brick Perkins School of Theology Bldg. (Selecman Hall), concrete pier and beam fdn., etc. $450,000. Plans deposit $25 general, $25 mechanical. Marq Lemmon, 1210½ Main St., archt. CD 4/17.

Tex., Highland Park—SCHOOL—B.A. 7/25—Highland Park Independent School Dist., Highland Park. 16-classroom Armstrong Elementary School. $310,000. Goodwin & Cavitt, 4801 Lemmon St., Dallas, archts. CD 4/10.

SOON LETS CONTRACT—BUILDINGS

Mo., Normandy (St. Louis 21 P. O.)—HOSPITAL—Normandy Osteopathics Hospital, 7840 Natural Bridge Rd., soon lets contract 2 story, ground floor, 44x260 ft., brick hospital, 7840 Natural Bridge Rd., Bernard McMahon, 101 IS. Meramec Ave., Clayton, Zone 5, archt.

Tex., Corpus Christi—LABORATORY—Columbia-Southern Chemical Corp., Box 4026, soon lets contract, laboratory unit. $245,000. CD 5/20.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Phelp-Drake Co., 1415 S.E. Eighth St., Minneapolis, Minn. CA $99,965. Water sys., EAGLE BEND, MINN. Village, C. B. Nuland, clk., Eagle Bend, Minn. Bids June 13. CD 5/28.

McLean-Astleford, 400 W. 78 St., Minneapolis, Minn. CA $199,017. Street imprvs., ST. ANTHONY, MINN. Village, H. H. Jenniges, clk., St. Anthony, Minn. Bids June 3. CD 5/29.

† Buchanan Hauling Co., 329 E. 27 St., North Kansas City, Mo. CA $130,747. Emergency levee repair, right and left banks Missouri River, Rushville, White Cloud and Atchison;

Richard E. Quinn, 5006 Main St., Kansas City, Mo. LB $111,730. Emergency repair 24 levees 37 mi. left bank Missouri River, Leavenworth, Atchison and Weston, MISSOURI and KANSAS. U. S. Eng., 601 Davidson Bldg., Kansas City, Mo. Bids June 16. CD 6/1/44.

G. L. Tarlton Contg. Co., 5505 Dale Ave., St. Louis 10, Mo. LB $65,270. Imprv municipal dock on Mississippi River at foot of North Market St., incl. trucking facili-

tles, furnishing, erecting prefabricated warehouse, ST. LOUIS, MO. City, Frank J. McDevitt, pres., Bd. P. Service, 304 City Hall, 12 and Market Sts., St. Louis 3, Mo. Bids June 17. CD 5/26.

† **C & S Constr. Co.**, Bonner Springs, Kan. LB **$87,604.** Emergency levee repairs west bank Missouri River 5 levees right bank, Atchison and Leavenworth Counties, KANSAS. U. S. Eng., 601 Davidson Bldg., Kansas City, Mo. Bids June 16.

American Paving & Constr. Co., 8600 Wayne St., Kansas City, Mo. CA **$94,461.** regrade, pave, etc. 87 St., Blue Ridge to Raytown Rd., KANSAS CITY, MO. Jackson Co., c/o R. H. Van Ness, Court House, Kansas City, Mo. Bids June 19. CD 5/29.

TEXAS—State Hy. Dpt., State Hy. Bldg., Austin,

Heidenfels Bros., Rockport, Tex., LB **$202,706.** T.& N.O. Railway underpass and approaches 1.077 mi. Hy. U. S. 281, Proj. FG 2 (3) and F 2 (4), Brooks Co.;

R. W. McKinney, P.O. Box 190, Nacogdoches, Tex., LB **$183,543.** Neches Relief Bridge and approaches, 1.148 mi. Hy. U. S. 90, FI 305 (4), Orange Co. Bids June 18. CD 6/9. 6/3.

▲ **TEXAS**—State Hy. Dpt., State Highway Bldg., Austin,

A. L. Bucy, 804 Avenue "H", Brownwood, Tex., LB **$110,940,** flexible base, asph. pavement 1.721 mi. Hy. U. S. 67 and 84, Proj. F 583 (12), Brown Co.;

H. L. Butler & Son and W. Paul Carlisle, P.O. Box 7112, Dallas 9, Tex., LB **$86,569.** grading, structures, base and surf. 5.072 mi. R-729-1-5, Grayson Co.;

Harry Campbell, 2854 Berry St., Fort Worth, Tex., LB **$140,176.** b. conc. pavement wid'n., flexible base, curb and gutter 0.942 mi. Hy. SH 24, Proj. C 134-4-8, Jack Co.;

Cooper & Woodruff, 222 Mays Bldg., Amarillo, Tex., LB **$152,588.** grading, structures, base and surf. 16.246 mi. Hy. FM 297, 807 and 1899, S 971 (2), Dallam and Hartley Counties;

O. W. Howard, Madisonville, Tex., LB **$204,193.** grading, structures 12.25 mi. Hy. U. S. 69, Proj. F 153 (2), Wood Co.;

M. B. Killian, 250 Mary Louise Dr., San Antonio, Tex., LB **$72,098.** grading, structures 9.313 mi. Hy. FM 1865, FM 1024, Terrel and ValVerde Counties;

L. H. Lacy Co., 5630 Yale Blvd., Dallas, Tex., LB **$409,296.** c. conc. 1.272 mi. Hy. U. S. 75, Proj. U. 515 (17), Dallas Co.;

L. H. Lacy Co., 5630 Yale Blvd., Dallas, Tex. and **Norman L. Larson**, 305 Littlefield Bldg., Austin, Tex., LB **$612,048.** c. conc. pavement and 2 railroad grade separation structures 2.682 mi. Hy. U. S. 69, F 353 (9), Angelina Co.;

R. W. McKinney, P.O. Box 190, Nacogdoches, Tex., LB **$159,466.** grading, structures, base and surf. 12.873 mi. Hy. FM 898, 1753 and 1752, Proj. S 1852 (1), Fannin Co.; LB **$69,464.** reshaping and strengthening existing base, surf. 6.312 mi. Hy. FM 36, Proj. C 642-2-2, Hunt Co.; LB **$232,206.** grading, structures, base and surf. 16.465 mi. Hy. FM 548 and FM 1777, Proj. S 1123 (1), Rockwall and Collins Counties;

W. O. Pelphrey, 1714 Electric Bldg., Fort Worth, Tex., LB **$66,592.** grading, structures, base and surf. 4.533 mi. Scurry Co.;

J. W. Perry, 501 Insurance Bldg., San Antonio, Tex., LB **$117,774.** grading, structures, base and surf. 5.654 mi. Hy. FM 1406, Proj. S 1746 (1), Chambers Co.;

R. B. Smith, Inc., 3702 Glen Haven St., Houston, Tex., LB **$211,446.** flexible base, and 2 course surf. tr. 4.594 mi. Hy. SH 62, Proj. 5.500 (1), Orange Co. Bids June 17. CD 6/3, 6/9, 6/10.

▲ **TEXAS**—State Hy. Dpt., Highway Bldg., Austin,

Harry Campbell, 2854 Berry St., Fort Worth, Tex., LB **$126,339.** grading, structures, base, surf. 9.829 mi. Hy. FM 1572, Proj. S 1600 (1), Fisher Co.;

Cage Bros., 506 Travis Bldg., San Antonio, Tex., LB **$378,612.** flexible base, 2 course surf. tr. 17.418 mi. Hy. U. S. 83, C 38-5-10, Zapata Co.;

Joe Davidson, Terrell, Tex., LB **$159,493.** grading, structure, base, surf. 6.188 mi. Hy. FM 1565, Hunt Co.;

J. R. Fanning, P.O. Box 1047, Lubbock, Tex., LB **$132,327.** wid'n. embankment, structures, addnl. base, 2 course surf. tr. 9.081 mi. Hy. U. S. 67, Proj. C 76-7-9, Upton Co.;

E. W. Hable & Sons, Corsicana, Tex., LB **$102,499.** grading, structures, base and surf. 7.109 mi. Hy. FM 1126, Proj. S 1340 (2), Navarro Co.;

Holland Page, Box 1181, Austin, Tex., LB **$173,888,** fdn. course, flexible base, and asph. surf. tr. 3.309 mi. Hy. U. S. 81, Proj. FI 1088 (1), Bexar Co.;

Long Bros., McKinney, Tex., LB **$151,745.** grading, structure, base, surf. 8.51 mi. Hy. FM 428, FM 1385, FM 388, SH 289, Proj. S 1118 (2), Denton and Collin Counties;

Hugh McMillan, P.O. Box 1227, El Paso, Tex., LB **$117,435.** grading, base and surf. 18.63 mi. Hy. FM 1111, Proj. R 1281-2-5, Hudspeth Co.;

Uvalde Const. Co., Box 3027, Dallas 1, Tex., LB **$205,806.** c. conc. 3.152 mi. Hy. SH 356 and 183, Proj. C 92-7-9, Dallas Co.;

Worth Constr. Co., P.O. Box 531, Fort Worth, and **Austin Bridge Co.**, P.O. Box 1590, Dallas, Tex., LB **$1,159,456,** grading, structure, bridges and pavement 2.196 mi. Corsair Access Rd. Proj. RD-1, Tarrant Co. Bids June 18. CD 6/10, 6/9 and 6/3.

† **U. S. Eng.**, 100 W. Vickery St., Fort Worth, Tex. cancelled bids to have been opened June 18, gas dispensing units, **$90,000;** c.i. water lines, **$45,000;** electrical lighting distr. sys., **$60,000;** gas distr. lines, **$60,000;** misc. work in military zone, **$250,000;** earth backfilling for underground utilities, **$50,000;** excavating and double asph. surf., **$75,000;** sanitary sewer lines, **$70,000;** motor repair shop, **$85,000;** oil storage bldg. and gasoline station, **$90,000,** Inv. No. Eng 41-443-52-49, FORT HOOD, TEX. U. S. Eng., 100 W. Vickery St., Fort Worth, Tex. CD 5/27.

McGinness Bros., Inc., 5619 Griggs Rd., Houston, Tex., LB **$126,333.** excavation, surf. tr., etc. White Oak Bayou drainage area, HOUSTON, TEX. Harris Co., Court House, Houston, Tex., Hugo Zapp, co. engr. Bids June 3. CD 9/26.

City, Laredo, Tex., Own Forces. **$75,000,** some WW sys. rehabilitation; **$75,000,** some c.i. water mains, LAREDO, TEX. Sigler, Clark & Winston, Weslaco, Tex., engrs. CD 4/6/51.

† **J. R. Fanning**, Plainview Hy., Lubbock, Tex., LB **$90,353,** rehabilitation of runways, Bid No. 41-620-52-19. Abernathy Field, LUBBOCK, TEX. U. S. Govt., c/o Contr. & Purch. Dpt., c/o Reese Air Force Base, Lubbock, Tex.

Holland Page, 705 W. 10 St., Austin, Tex., LB **$188,847,** est. $145,000, road constr. and asph. paving 17.1 mi.;

J. E. Fannin, Lubbock, Tex., LB **$73,023,** est. $70,000. road const. and asph. paving 6½ mi., MIDLAND, TEX. Midland Co., Court House, Midland, Tex. Wilkinson Eng. Co., Colorado City, Tex., engr. Bids June 10.

▲† **Marye-Northwestern Co.**, 1300 Cherokee St., Denver, Colo., LB, $1,171,417, est. $1,000,000, 263x278 ft. academic hangar bldg. with two 29x164 ft. wings, utilities and grading Lowry Air Force Base, DENVER, COLO. U. S. Eng. 1709 Jackson St., Omaha, Neb. Bids June 18. CD 5/23.

† **Campbell & Kay**, Box 836, Tyler, Tex., LB **$393,500.** 143x180 ft. masonry Missile Assembly Bldg. 3, Serial No. Eng 29-005-52-27. ALAMOGORDO, N. M. U. S. Eng., Box 1538, Albuquerque, N. M. Bids June 12. CD 5/21.

BUILDINGS

SOON LETS CONTRACT

Naugle-Leck, Inc., 714 Baker Bldg., Minneapolis, Minn. CA. **$358,640.** general contract sub-bsmnt., bsmnt., 65x156 ft., PUBLISHING BLDG., 5 St. and 5 Ave. South, MINNEAPOLIS, MINN. Augsburg Publishing House, 425 S. 4th St. South, Minneapolis, Minn. Bids Apr. 8. CD 3/27.

Wm. Knudson & Sons, Inc., 508 Flynn Bldg., Des Moines, Ia. CA. **$300,000,** 25,000 sq. ft. STORE, 19 and Keosauqua Ave., DES MOINES, IA. Katy Drug Co., Katy Bldg., 12 and Walnut Sts., Kansas City, Mo. Kivitt & Meyers, 10 Baltimore St., Kansas City, Mo., archts.

Kucharo & Assoc., Inc., 225 Jewett Bldg., Des Moines, Ia. CA. **$350,000** Soldiers' Home HEATING and POWER PLANT, MARSHALLTOWN, IA. Bd. Control, State Institutions, State Office Bldg., Des Moines, Ia. Bids Apr. 9. CD 3/14.

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Collins Constr. Co., Scarritt Bldg., Kansas City, Mo. and **Swinerton & Walberg Co.,** 1723 Webster St., Oakland, Calif. CA. **$525,000.** TRUCK TERMINAL facilities, Woodsweather Rd. and Liberty St., KANSAS CITY, MO. Pacific Intermountain Express Co. Truck Lines, Inc., 1401 Independence Ave., Kansas City, Mo. Awarded June 12. CD 5/29 under CA.

Kloster Co., 4607 Beck Ave., St. Louis 16, Mo. CA. 51x73 ft. and 44x111 ft., brick, concrete, stone T-shaped CHURCH and SCHOOL, LEMAY (ST. LOUIS 23, P.O.) MO. St. Francis of Assisi Parish, Rev. Victor Weissler, O.F.M. pastor, Telegraph Rd. near Yaeger Rd., St. Louis Co., Mo. Bids June 10. CD 5/29.

Swan Constr. Co., 8615 Laclede Station Rd., Affton 23, Mo. CA. 1 story, 80x140 ft., V-2 steel, fabrication PLANT, 621 Red Bud Ave., ST. LOUIS, MO. Flori Pipe Co., 601 Red Bud Ave., St. Louis 15, Mo.

Wm. S. Rawlings Constr. Co., 1000 Forest St., Kansas City, Mo. CA. Est. **$400,000.** LUMBER YARD, SALES-ROOM and OFFICES, 4400 Roe Blvd., KANSAS CITY, KAN. Robt. L. Sweet Lumber Co., 4260 Broadway, Kansas City, Mo. Ralph E. Kiene, Jr., c/o owner, archt. CD 10/1/51.

† **Warren Waters,** 419 Eastwood St., Fort Worth, Tex., LB. **$105,500,** est. $92,024, central MEAT CUTTING PLANT, FORT HOOD, TEX. U. S. Eng., 100 W. Vickery St., Fort Worth, Tex. CD 1/4.

Hobbs Mfg. Co., 4510 Navigation Blvd., Houston, Tex., Purchase and Hire. **$95,000.** reconstruct burned out portion of FACTORY, HOUSTON, TEX. CD 4/10.

Cadenhead Constr. Co., Bossier City, La., Owner Builds. **$345,000.** 6th unit of HOUSING; Approx. **$350,000,** 7th unit of housing, LONGVIEW, TEX. CD 4/11/51.

▲ **Stanolind Oil & Gas Co.,** Odessa, Tex., Own Forces. approx. **$1,100,000.** sulfur-recovery PLANT unit, ODESSA, TEX. CD 4/16.

C. F. Braun & Co., 1000 S. Freemont Ave., Alhambra, Calif., CA. Approx. **$850,000.** Glycol PLANT unit, near PORT NECHES, TEX. Jefferson Chemical Co., Port Neches, Tex. CD 9/21.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION

Wash., Walla Walla—B.A. 7/23—City, City Hall, machinery and equipment for $525,000 expansion of sewage treatment plant. Plans deposit $15. Stevens & Koon, 600 National Bldg., Portland Ore., engrs. CD 1/25.

BIDS ASKED—BUILDINGS

Wash., Washougal—SCHOOL—B.A. 7/11—School Dist. 112, Washougal, frame elementary school $300,000 Plans deposit $25. Freeman, Haysl.p & Tuft, 2040 SW. 3 Ave., Portland, Ore., archts. CD 6/22.

▲ **Calif., Los Angeles**—PLANT AND BIOLOGICAL SCIENCES BLDG.—B.A. 7/15—University of California, 405 Hilgard Ave., 3 story, rein.-con. plant and biological sciences bldg. $1,000,000. Chambers & Hibbard, 124 W. 4 St., archts.

▲† **Calif., Barstow**—BARRACKS—B.A. 7/16—U. S. Eng., 751 S. Figueroa St., Los Angeles, 38 barracks, 4 B. O. Q. bldgs., Camp Irwin, Eng. 04-353-52-75. $1,000,000. Plans deposit $25. CD 11/13/51.

Wash., Prosser—SCHOOL—B.A. 7/16—School District 116—Prosser, Whitstran Elementary School, $404,000. Plans deposit $25. W. A. Rothe, 807 W. Yakima Ave, Yakima, archt. CD 11/27/51.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† **J. H. Welsh & Son Constr. Co.,** 805 S. Central Ave., Phoenix, Ariz. LB **$60,825.** bulk jet fuel storage, Luke Air Force, Eng. 04-353-52-61, PHOENIX, ARIZ. U. S. Eng. 751 S. Figueroa St., Los Angeles, Calif. Bids June 13. CD 6/6.

Washington—State Hy. Dpt., Olympia.

Donald M. Drake Co., Lewis Bldg., Portland, Ore., CA **$213,744,** rein.-con. box girder bridge over Washougal River at Oak Park, Clark Co. Bids June 16, CD 6/4.

Washington—State Hy. Dpt., Olympia.

Peter Kiewit Sons Co., Longview, Wash., CA, **$114,086,** b. conc. and c. conc. Hy. 12, east approach to Cowlitz River Bridge, Kelso, Cowlitz Co.;

J. A. Bryant, Hutton Bldg., Spokane, Wash., CA, **$162,250** stockpiling crushed stone surf., ballast and mineral aggregate on Hy. 2 Snoqualmie Pass to Olallie Creek, King Co.;

Briggs Constr. Co., 1107 A St., Tacoma, Wash., CA, **$76,260** clearing, draining, grading 2.3 mi. extensions to Cougar Creek and Bear Basin mine-to-markets roads King Co., Grand total $352,596. Bids June 17. CD 6/4.

† **E. E. White,** 9504 East St. E., Tacoma, Wash., LB **$72,680,** rehabilitating 20 mi. railroad track at Auburn General Depot by replacing ties, ballast etc. Inv. 52-7, AUBURN, WASH. Dpt. Army, Purch & Contg. Office, Auburn General Depot, Auburn Wash. Bids 6/16 CD 6/4.

† **J. D. Shotwell,** 3113 S. Pine St., Tacoma, Wash., LB, **$169,892,** surfacing roads, streets, Inv. 52-140, Inv. 52-141, and Inv. 52-142, FORT LEWIS, WASH. Dpt. Army, Purch & Contg. Officer, Fort Lewis, Wash CD 7/27/51.

† **J. Helstrom,** Astoria, Ore., CA, **$88,259,** 20x108 ft. masonry loran and fog signal bldg. at Point Grenville Inv. FS 519, MOCLIPS, WASH. Coast Guard, New World Life Bldg, Seattle, 4, Wash. Bids June 17.

† **General Constr. Co.,** 3840 Iowa St, Seattle Wash., LB **$161,420,** repairing main and spur tracks at Seattle Port of Embarkation, Inv. 52-59 SEATTLE, WASH. Dpt. Army, Pentagon Bldg., Wash., D. C.

† **Harco Corp.,** 16901 Broadway, Cleveland, O., LB **$69,000,** experimental cathodic protection at Pier

8, U. S. Naval Station, Tongue Point, Spec. 34223, ASTORIA, ORE. P. Wks. Officer, 13th Naval Dist., 1611 W. Wheelers., Seattle, Wash. Bids June 17. CD 6/4.

F. W. Case Co. & Harry Gash, 7700 Balboa Ave., Van Nuys, Calif. LB $98,872. Turnbull Canyon Debris Dam, Whittier, LOS ANGELES, CALIF. Los Angeles County Flood Control Dist., 751 S. Figueroa St., Los Angeles, Calif. Bids May 27.

BUILDINGS

LOW BIDS AND CONTRACTS

▲† George W. Carter Co., Box 17150 Fay Station, Los Angeles, Calif. CA $3,122,699. field TRAINING FACILITIES at Camp Margarita, Camp Pendleton Marine Barracks, Oceanside, CAMP PENDLETON, CALIF. Dpt. Navy, San Diego, Calif. CD 6/18 under LB.

Paul W. Speer Inc., 3425 Cahuenga Blvd., Los Angeles, Calif. LB $648,989. Enterprise Junior HIGH SCHOOL, addns., alterations, COMPTON, CALIF. Compton Union High School Dist., 601 S. Acacia St., Compton, Calif. Bids June 13. CD 6/4.

Albert Reingardt, 3825 E. 7 St., Long Beach, Calif. LB $410,980. 1 story, frame stucco intermediate SCHOOL, Meyer Pl. and Hamilton Ave., COSTA MESA, CALIF. Costa Mesa School Dist., 1900 Newport Bldg., Costa Mesa, Calif. Bids June 11. CD 6/2.

Antelope Valley Joint Union High School Dist., 1000 Division St., Lancaster, Calif., rejected bids June 11, high school addn., Randsburg, LANCASTER, CALIF. CD 5/29.

▲ Wm C. Crowell, 170 E. California St., Pasadena, Calif., CA, $2,316,100, general contract 12 WARD BLDGS. at Pacific Colony, SPADRA, CALIF. State Div. Architecture, P. Wks. Bldg., Sacramento, Calif. Bids May 27, awarded June 16. CD 6/3, under LB.

ALASKA

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† ALASKA—Alaska Road Comn., 311 Federal and Territorial Bldg., Juneau.

Stock & Grove, Inc., Anchorage, Alaska, LB $768,610, clearing, grading, draining, 43.3 mi. Glenn Hy. Sect. C. Bids June 16. CD 5/22.

BUILDINGS

LOW BIDS AND CONTRACTS

† S. Bergesen, Rt. 10, Box 971, Tacoma, Wash., CA $566,902, SCHOOL, KODIAK, ALASKA. Alaska P. Wks., Dpt. Interior, Juneau, Alaska. Bids May 14. CD 5/21, under LB.

CANADA

SOON LETS CONTRACT—BUILDINGS

Ont., Toronto—WAREHOUSE—Midcontinent Truck Terminal Ltd., c/o Wilson & Newton, archts., 1104 Bay St., soon lets contract 2 story, 80x140 ft. warehouse and 2 story, 40x60 ft., concrete, steel office section, $100,000.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Pioneer Constr. Co., Sudbury, Ont., CA, street paving; Warren Bituminous Paving Co. Ltd., 1454 Bloor St. W., Toronto, Ont., CA, street resurfacing SUDBURY, ONT. City, City Hall, Sudbury, Ont. Total $300,000, CD 4/24.

Angotti Constr. Co., Ltd., 20 Brandon Ave., Toronto, Ont., CA. Approx. $95,594. sewage treatment plant on west of Keele St. to incl. primary treatment facilities with activated sludge and secondary treatment facilities with sludge digesters, sand filters and sludge drying beds, TORONTO, ONT. North York Twp., A. G. Standing, clk., Toronto, Ont. Bids May 22. CD 5/12.

Verona Constr. Ltd., 354 St. Catherine St. E., Montreal, Que. CA. Est. $300,000. water and sewer work, conducts, pumping stations, ST. GENEVIEVE DE PIERREFONDS, QUE. Municipality, Ste. Genevieve de Pierrefonds, Que. Bids Mar. 23. CD 3/19.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ Poole Constr. Co. Ltd., 10503 109 St., Edmonton, Alta., CA, $1,000,000 Leaching PLANT at new nickel refinery, FORT SASKATCHEWAN, ALTA. Sherrit Gordon Mines Ltd., 25 King St. W., Toronto, Ont. Chemical Construction (Inter-American) Ltd., 74 Wellington St. W., Toronto, Ont., engrs. Awarded June 16.

M. F. Schurman Co., Ltd., Eustane St., Summerside, P.E.I., CA, $615,075, SCHOOL, AMHERST, N. S. Amherst School Bd., V. M. Parrett, town clk., Town Hall, Amherst, N. S. D. A. Webber, 100 Granville St., Halifax, N. S., Awarded June 17. CD 9/14/51.

Proposed Projects

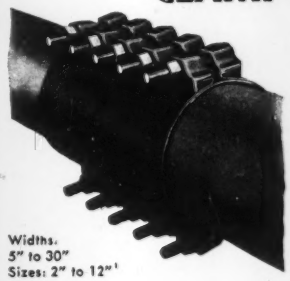
WATER SUPPLY

▲ La., Bossier City—City, $2,000,000 bond election Aug. 19, WW imprvs., Fromherz Assoc., 823½ Poydras St., New Orleans, consult. engrs.

N. C., Mebane—Town, bond election July 8, WW imprvs. $146,000. CD 1/25/51.

SMITH BLAIR INC.

Full Circle CLAMP COUPLINGS



Widths: 5" to 30"
Sizes: 2" to 12"

★ For PERMANENTLY repairing broken or cracked pipe

By utilizing the flexibility, durability and strength of copper or stainless steel, the Smith-Blair Full Circle Clamp Coupling has proved itself to be a revolutionary repair unit. It is fast becoming the standard method of repair for the water works throughout the United States and Canada. It is a *permanent* repair unit for *any* type of pipe.

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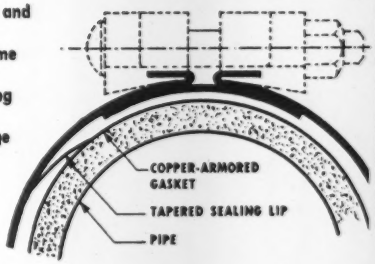
- Requires less excavating for installation
- Gives higher percentage of complete shut-offs on the first try — under pressure.



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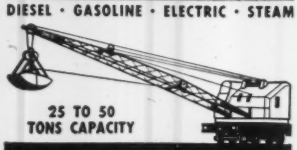

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▲ **Mo., St. Louis County**—St. Louis Co. Water Co., W. Victor Weir, pres., 6600 Delmar Blvd., University City, Zone 5, installing 1,500,000 gal. tank, foundations, etc. in Affton area of St. Louis Co., addnl. distr. lines of 6-to 12-in. to serve various sections of county due to development of new subdivisions in northern and southern portions, $1,000,000.

Okla., Nowata—City, remodel water plant. $150,000. Fell & Wheeler, Mutual Bldg., Tulsa, consult. engrs.

Tex., Houston—City, City Hall, 900 Brazos St., "emergency" water main sys. for use under disaster conditions, 10 mi. 20 in. pipe in Ship Channel area. $500,000. W. E. White, city engr. CD 1/5/51.

Tex., Pasadena—City, bond election May 3 cancelled, water sys. rehabilitation, $90,000; new water lines into recently developed areas, $250,000. George S. Smith, city engr. CD 4/16.

Tex., Taft—City, bond election Feb. 29 voided on legal technicality, WW, $100,000. Helland & Seligmann, 302 Frost Bank Bldg., San Antonio, consult. engrs. CD 3/6.

▲ **Wis., Green Bay**—Green Bay Water Comn., City Hall, Lake Water intake and filtration plant, $5,000,000. Alvord, Burdick & Howson, 20 N. Wacker Dr. Chicago 6, Ill., consult. engrs. CD 8/23/50.

SEWERS, WASTE DISPOSAL

La., Winnfield—City, sanitary sewer imprvs. $100,000. Porter, Barry & Assoc., 1730 Main St., Baton Rouge, consult. engrs.

Mass., Needham—Town, Dpt. P. Wks., Town Hall, pump station, $76,000. exten. sewers, $124,000, Fuller Brook Dist., near Wellesley line.

▲ **Mich., Grand Rapids**—City, secondary sewage plant. $2,000,000. Drury, McNamee & Porter, State Savings Bank Bldg., Ann Arbor, consult. engrs. CD 1/10/47.

S. C., Columbia—City, City Hall, bond election Aug. 5, storm sewers, $775,000.

Tex., Brookshire—City, voted bonds, sanitary sewers, $150,000. S. A. Russell, Rosenberg, consult. engr.

Tex., Daingerfield—City, voted bonds June 14, sanitary sewer lines, some sys. rehabilitation, $65,000; sewage disposal plant, $60,000. CD 6/11.

Tex., Fort Worth—City, City Hall, some sanitary sewers. $500,000. Carter & Burgess, 815½ Throckmorton St., consult. engrs. CD 9/17.

Tex., Govalle—City, A. Ullrich, supt. Sewers, City Hall, sewage disposal plant, $340,000; sanitary sewer lines, $60,000.

Tex., Houston—Forest Glen Development Corp., c/o Conrad Bering, 3402 San Jacinto St., storm sewers, $60,000; sanitary sewers, $60,000, in Memorial Drive area.

Tex., Pasadena—City, bond election May 3 cancelled, sanitary sewerage sys., reahabilitation, $125,000; sewage disposal plant, $100,000; sanitary sewer lines extending into recently developed areas, $451,000. George S. Smith, city engr. CD 4/16.

Tex., Taft—City, bond election Feb. 29 voided on legal technicality, sanitary sewers, $100,000. Helland & Seligmann, 302 Frost Bank Bldg., San Antonio, consult. engrs. CD 3/6.

Wash., Pateros—City, bond election Nov. 4, primary treatment plant, $120,000. Hellmer-Hughes & Assoc., Wenatchee, consult. engrs.

Wis., Washburn—City, sewage treatment plant and sanitary sewer, $135,000. Davy Eng. Co., 524 Main St., La Crosse, consult. engr.

BRIDGES

▲ **Mich., Bloomfield Hills**—City, City Plan Comn., constr. cut-off from east to west Long Mile Rd. constr. underpass at Woodward, $1,000,000.

STREETS AND ROADS

Colo., Denver—City and Denver Co., City and County Bldg., concrete curb, gutter, sidewalk grav. base course, b. conc. paving, etc. street Paving District 186, $124,500; c. conc. pavements Alley Paving District 242, $87,100. Terry Owens city engr. CD 2/7/52.

Ill., Chicago—City, City Hall, resurfacing Lake Park Ave., 56 to 47 Sts., $170,000; resurfacing Stony Island Ave. from 56 to 69 Sts., $150,000. CD 4/25/45.

▲ **MASSACHUSETTS**—Commonwealth of Mass., Metropolitan Dist. Comn., 20 Somerset St., Boston,

Medford—Limited Access Rd. from Fellsway West near Fulton St. to Mystic Valley Parkway to follow approx. course of Gravel Creek running to Salem St. over Boston & Main R. R. Western Div. to Riverside Ave. and across Mystic River to new connection Mystic River Parkway now under construction. $3,500,000.

▲ **OHIO**—Ohio Turnpike Comn., Columbus, 241 mi. super highway, incl. 619 bridges across Ohio from Pennsylvania Turnpike terminus to Indiana State Line. $326,000,000. J. E. Greiner Co. and Parsons, Brinckerhoff, Hall & Macdonald, 33 N. High St., Columbus, Zone 15, consult. engrs. CD 4/26/51.

O., Cincinnati—Hamilton Co., Court House, and City, City Hall, exten. Westwood-Northern Blvd. from Boudinott Ave. to North Bend Rd. $122,508; imprv.

Galbraith Rd. from Hamilton Ave. to west corporation line of North College Hill, $97,805; remaking of North Bend Rd. from Hamilton Ave. to Argus Rd. to 40-ft. concrete road, $366,914. George M. Lemmel, Court House, co. engr.

Okla., Lawton—City, c. conc. paving 19 St. $110,000. Charles Gallagher, c/o owner, engr. CD 1/21.

Okla., Oklahoma City—City, City Hall, grade and pave Agnew from Reno to Exchange Avs. $140,000. W. W. Baker, city engr.

Okla., Oklahoma City—City Hall, asph. paving N. Santa Fe St. from 50 to 89 Sts. $200,000. W. W. Baker, city engr.

S. C., Columbia—City, City Hall, bond election Aug. 5, street paving. $740,000. CD 5/19.

Utah, Salt Lake City—Salt Lake City Corp., c/o Irma Bitner, rcdr., City and County Bldg., sidewalks, curb and gutter, drainage sys. and pavement of gravel base and asph. wearing surf. in Curb and Gutter Exten. No. 12, $321,961; construct sidewalks, curb and gutter, pavement with gravel base and 2 in. asph. topping, in Curb & Gutter Dist. No. 38-174, $138,578. Roy McLeese, c/o owner, city engr. CD 5/24/44.

▲ **Ont., Toronto**—North York, Leaside, East York and Scarboro Twps., O. E. Crockford, Keeve of Scarboro Twp. exten. Eglinton Ave. across Don River in Scarboro Twp. $3,500,000. CD 2/19/51.

EARTHWORK, WATERWAYS

▲ **Massachusetts**—Commonwealth of Mass., Metropolitan Dist. Comn., 20 Somerset St., Boston, Mystic River Dam, 700 ft. upstream from Wellington Bridge to exclude upper Mystic River from tides making possible development Mystic River Basin, Medford. $1,000,000.

▲† **Tennessee**—U. S. Eng., 303 Federal Office Bldg. Nashville, 36,000 kw. power house for Chetham Dam, Cumberland River. $18,000,000.

AIRPORTS

▲ **Mass., East Boston**—HANGAR—State, Aeronautics Comn., Logan Airport, 265x275 ft. hangar. $2,500,000, American Airlines, lessee. CD 4/13/48.

Mich., Detroit—AIRPORT HANGAR—Wayne County Bd. Rd. Comrs., John P. O'Hara, chn., hangar at Wayne County Airport for Air National Guard, $750,000. Leroy Smith, 1900 Cadillac Tower, co. engr. CD 8/29/51.

▲† **Tex., Forth Worth**—AIR BASE—U. S. Eng., 100 W. Vickery St., barracks or warehouse, $3,000,000; storage or warehousing, $2,000,000; runways, $2,400,000; maintenance bldg. $400,000; fueling sys. $250,000; taxiways, $650,000; messes, $500,000; shops $600,000; water sys. $125,000; sewers, $150,000; apron extens. $750,000; misc. bldgs. and facilities, $4,500,000; for Carswell Air Force Base.

Wash., Seattle—HANGAR—Western Air Lines, Inc., Skinner Bldg., hangar at Seattle—Tacoma Airport. $223,000.

LATIN AMERICA

▲ **Guatemala**—Govt. of Guatemala, Guatemala City, dock facilities at Puerte Barries. $3,000,000. International Engineering Co., c/o Morrison-Knudsen, Inc., 319 Broadway, Boise, Idaho, U. S. A., have completed survey.

Mexico, Mexicali Valley—Cia. Industria Electrica Mexicana, S.A., Harold Louden, mgr., Mexicali, B.C. plans 4 electricity sub-stations. $600,000.

▲ **Mexico, Mexico City**—City Govt., Lic. Fernando Casas Aleman, mayor, palacio Municipal, Mexico City, plans mercantile exchange. $1,000,000.

Mexico, Reynosa—City, Water Dpt., c/o A. Perez, water chlorination plant, $75,000; 2 water reservoirs (probably concrete ground type) $200,000; new water distr. sys. $90,000. CD 1/10/46.

PUBLIC BUILDINGS

† **Ark., Shumaker**—OFFICE—Dpt. Navy, Eighth Naval Dist., U. S. Station Bldg. 16, New Orleans, La., plans by Bruggeman, Swaim & Allen & Assocs., Gazette Bldg., Little Rock, office and fire station at Naval Ammunition Depot. $250,000. CD 12/6/51.

Calif., Kernville—SCHOOL—Kernville Union High School Dist., Box 106, plans by Wright, Metcalf & Parsons, Morgan Bldg., Bakersfield, elementary school, Erskin Creek Rd., Isabella, $300,000.

Colo., Sterling—SCHOOL—School District 12, Sterling, 1 story, brick grade school. $375,000. Eugene D. Sternberg, 1444 Court Pl., Denver, consult. engr. and archt.

Conn., Manchester—SCHOOL—Town. Bd. Educ., Manchester, plans by Ebbets Frid & Prentice, 862 Asylum Ave., Hartford, high school, Memorial Field, $750,000. CD 4/7.

▲ **Fla., Miami**—HOUSING—Miami Housing Auth., 327 N. W. 62 St., plans by Steward & Skinner, 223 S.E. 1 St., and Robert Law Weed & Assocs., 550 Brickell Ave., Miami, Fla., 1,000, Negro Housing units. $8,500,000.

Ga., Augusta—LIBRARY—Richmond Co., Court House, plans by Eve & Stulb, Campbell Bldg., library. $650,000.

▲ **Ga., Savannah**—HOSPITAL—City and Chatham Co., c/o city clerk, City Hall, hospital. $5,000,000.

Ill., Deerfield—SCHOOL—School District 109, c/o Grade School, school, west of Milwaukee Rd. $300,000.

Mass., Acton—SCHOOL—Town, Porter Jenks, chn. Bldg. Comn., c/o School Dpt., plans by S. W. Haynes & Assoc., 336 Main St., Fitchburg, high school addns., combination gymnasium and auditorium. $300,000.

▲ **Mass., Boston**—PARKING GARAGE—Federal Parking Corp., c/o Checker Taxi Co., 10 Gainsboro St., has been selected to construct 600-car parking garage Winthrop Sq. for City of Boston, $1,200,000, Abbott Associates, 131 State St., Boston, archts. CD 8/21/51.

Mass., Melrose—SCHOOL—City School Comn., 585 Main St., plans by Thomas Hixon Co., 1150 Commonwealth Ave., Boston, Roosevelt Elementary School addn., Vinton St. $300,000. Albert Goldberg, 739 Boylston St., Boston, struct. engr. CD 11/20/51.

Mass., Wilmington—SCHOOL—Town, Supt. Schools, plans by Thomas Hixon, 1150 Commonwealth Ave., Allston, elementary school. $400,000. CD 6/9/49.

▲ **Mich., Lansing**—CIVIC CENTER—City, Mayor Ralph W. Crego, City Hall, plans by Orlie J. Munson, 409 Wilson Bldg., Lansing, brick, steel, concrete, stone civic center, auditorium, $3,500,000; civic office, $1,000,000; Prudden Memorial Theater, $1,500,000. CD 10/12/45.

Minn., St. Paul—JAIL—Bd. Comrs. Ramsey Co., Tony Schmidt, chn., 4 story jail, below street level, Kellogg Blvd. between St. Peter and Wabasha Sts., $600,000.

▲ **Neb., McCook**—SCHOOL—Bd. Educ., McCook, voted bonds, school constr. and imprvs. $1,325,000. CD 5/14.

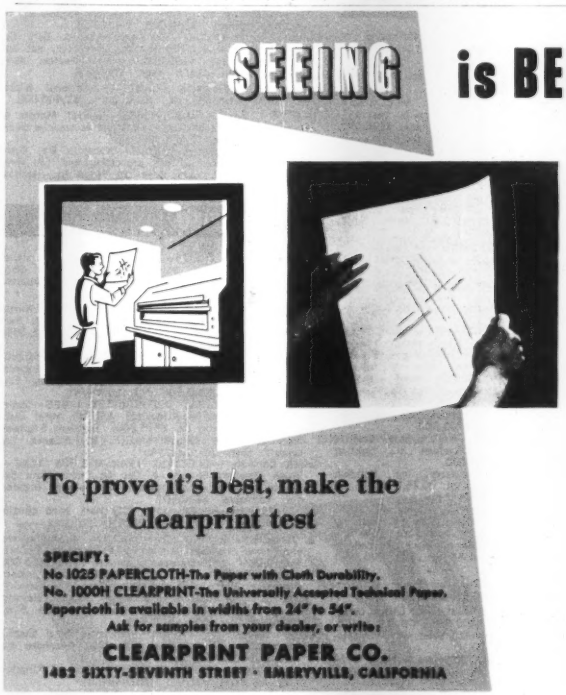
▲† **N. J., Fort Dix**—COMMUNICATIONS CENTER, etc.—Dpt. Army, 121 N. Broad St., Phila., Pa., plans by Irwin Gerber, engr. and archt., 11 Commerce Bldg., Newark, base communications center, guard house, officers mess bldg. and inflammable storage bldg., $1,000,000; plans by Edwards & Green, engr. and archt., 17 S. 5 St., Camden, quartermaster administration bldg., $1,600,000.

N. C., Pittsboro—HIGH SCHOOL—Chatham Co. Bd. Educ., Pittsboro, plans by Frank B. Simpson, Raleigh, high school. Approx. $300,000.

▲ **O., Cleveland**—SCHOOL—Bd. Educ., 1380 E. 6 St., Zone 14, plans by Arthur F. Baer, c/o owner, 2 story brick school to be known as Charles W. Elliott Junior High School, E. 165 St. and Miles Ave. $1,500,000. CD 11/14/50.

▲ **Okla., Tulsa**—COURT HOUSE—Tulsa Co., bond election July 22, county court house, $1,000,000. Black & West, Tri State Bldg., archts. CD 7/13/50.

Okla., Pawhuska—HOSPITAL—City, Pawhuska, plans by W. R. Brown, Ponca City, hospital addn. $300,000.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▲ **S. C., Charleston**—HIGH SCHOOL—Bd. School Comrs., 14 St. Philip St., plans by A. E. Constantine, 139 Calhoun St., Negro High School addn. $1,000,000.

S. C., Columbia—JAIL—City, City Hall, bond election Aug. 5, jail. $410,000.

Tenn., Sweetwater—PLANT—City, City Hall, voted bonds, mfg. plant. $150,000.

Tex., Abernathy—HIGH SCHOOL—Abernathy Consolidated County Line Independent School Dist., Abernathy, plans by Atcheson & Atkinson, Sanford Bldg., Lubbock, high school, $300,000.

Tex., Elsa—SCHOOL—Edcouch-Elsa Independent School Dist., Elsa, Austin Peavy, supt., school. $375,000.

Tex., Pampa—SCHOOL—Pampa Independent School Dist., Pampa, voted bonds June 14, elementary school. $400,000. CD 6/16.

Tex., Pasadena—SCHOOL—Pasadena Independent School Dist., Pasadena, plans by Lloyd & Morgan, 4605 Montrose St., Houston, 26-classroom elementary school. $500,000. CD 6/1/51.

Tex., Silsbee—CAFETERIA and SHOP—Silsbee Independent School Dist., Silsbee, plans by Geo. L. Ingram, 690 Hazel St., Beaumont, 3 rein.-con., frame cafeterias, and shop. $300,000.

▲† **Va., Radford**—ARSENAL—Dpt. Army, Radford Ordnance Works, Radford, rehabilitating the Radford Arsenal. $10,573,300. Hercules Powder Co., 917 Market St., Wilmington, 9, Del., will operate.

Wash., Steilacoom—WARD—State Dpt. P. Instruction, Olympia, women's ward bldg. at Western State Hospital $850,000.

B. C., Prince George—SCHOOL—Prince George School District 57, Robert Gracey, secy.-treas., Prince George, plans by Gardiner & Thornton, 1664 W. Broadway, Vancouver, Connaught School, $400,000.

▲ **N. S., Halifax**—HOUSING—Central Mortgage & Housing Corp., 1032 Gottingen Stt., Halifax, housing, $1,500,000.

Ont., Belleville—SCHOOL—Bay of Quinte High School Area, H. C. Seldon, chn., Belleville, high school. $875,000.

Ont., Forest Hill—SCHOOL—Forest Hill Village Bd. Educ., Dr. J. Long, chn.; plans by Page & Steele, 72 St. Clair Ave. W., Toronto, 2 story Junior High School and West Preparatory School addn. $800,000.

Que., Dolbeau—HOSPITAL—Province of Quebec, Dpt. Helath, **Quebec City, hospital.** $500,000. CD 3/7/50.

COMMERCIAL BUILDINGS

Ala., Birmingham—BANK—**First National Bank, First** National Bldg., bank addn. $675,000.

Ark., Little Rock—CHURCH ANNEX—Pulaski Heights Methodist Church, Woodlawn and Monroe Sts., plans by Edw. T. Bruggeman, Pyramid Bldg., church annex. $300,000.

Ga., Atlanta—CHURCH—Wheat Street Baptist Church, Wheat St., church, $350,000.

Ga., Macon—LAW—Mercer University, Macon, law bldg. $750,000.

Ia., Sioux City—DORMITORY—Morningside College, Morningside Ave., plans by Wm. Beuttler, 405 Insurance Exchange Bldg., men's dormitory, $530,000. CD 10/26/51.

▲ **La., New Orleans**—SHOPPING CENTER—W. H. Crawford, 2019 N. Third St., Baton Rouge, Gentilly Woods Shopping Center, $5,000,000.

▲ **Md., Bethesda**—APARTMENT—Concord Realty Co., 2 Pooks Hill Rd., plans by John P. Fitzsimmons, engr. and archt., 1731 New Hampshire Ave. N. W., Wash., D. C., 2 story, 220 apartment units, Pooks Hill area, $2,000,000.

▲ **Mass., Boston**—APARTMENT—Nordblom Co., 50 Congress St., plans by Edwin T. Steffian, 11 Beacon St., 12 story apartment, incl. 400 units, South End, $3,800,000.

▲ **Mich., Grand Rapids**—DORMITORIES, etc.—Calvin College, Bd. Trustees, Rev. R. J. Prens, secy., 1331 Franklin St. S.E., plans by J. & G. Daverman Co., 924 Grandville St., 2 dormitories, classrooms addn., physical education bldg. $2,000,000 CD 9/14/51.

Mich., Lansing—CHURCH—First Presbyterian Parish, Bd. Trustees, Dr. J. Earl McInyre, chn., c/o O. J. Munson, archt., 409 Wilson Bldg., 1 story, bsmnt., brick stone church, incl. tower, $350,000.

▲ **Mich., Livonia**—SHOPPING CENTER—Sheldon Land Co., Warren Sheldon, pres., 32121 Plymouth Rd., Plymouth, plans by Charles N. Agree, 1140 Book Bldg., Detroit, brick, concrete 250,000 sq. ft. floor space shopping center, Plymouth and Farmington Rds., $5,000,000.

N. C., Greensboro—MOTEL—Brown Realty Co., Greensboro, motel on 23-acre site, Old Cone Ball Park. $350,000.

N. C., Weldon—MOTOR COURT—J. P. Olivero, c/o F. Carter Williams, archt., 10th St. Bldg., Roanoke Rapids, motor court. Approx. $300,000.

Tenn., Nashville—CHURCH—Immanuel Baptist Church, 1701 W. End Ave., church. $450,000.

Tex., Austin—HEADQUARTERS—Veterans of Foreign Wars, 801 Rio Grande St., plans by Doyle M. Baldridge & Glynn L. Harris, 209 W. 7 St., 5 story bsmnt., 46x128 ft., brick masonry headquarters bldg., stores on 1st floor, offices on upper four. $400,000. Wilson & Cottingham, Littlefield Bldg., consult. engrs. CD 1/24.

Tex., Belton—DWELLINGS—Neil Holm, 4934 Maple St., Dallas, plans by Millam & Roper, 368 Casa Linda Plaza, Dallas, 50 frame dwellings, concrete slab fdn. $350,000; 35 frame, sheet rock dwellings and duplexes, concrete slab fdn. $375,000.

Tex., El Campo—CHURCH—First Methodist Church, El Campo, church. $300,000.

Tex., Houston—HOUSING—Draper Constr. Co., 7236½ Long Dr., addnl. frame housing units, concrete slab fdn., north of Sims Bayou. $300,000.

Tex., Houston—DWELLINGS—H. & D. Constr. Co., 6200 Reveille St., addnl. frame dwellings, concrete slab fdn., south of Long Dr. $325,000.

Tex., Houston—DWELLINGS—F. Ivanzini, Builder, & Co., c/o Bonne Oaks, 20 frame, cedar shake dwellings, concrete slab fdn., $315,000; 30 cedar shake, brick, stone dwellings, concrete slab fdns. $450,000, Campbell and Katy Rds.

▲ **Tex., Houston**—OFFICE—Second National Bank of Houston, 800 Main St., 25 story bsmnt., bank and office. $4,000,000. CD 3/20.

Tex., Houston—DWELLINGS—Thomas & Carol Constr. Co., c/o Tom Notestine, 13331 Corpus Christi Rd., 10 brick dwellings, concrete slab fdn., in area of Taylor Rd. $300,000; 15 brick, redwood dwellings, concrete slab fdn., in area of Lazywood addn., $375,000.

Tex., Longview—APARTMENTS—H. E. & S. Constr. Co., Longview, 10 brick, reinforced low-cost apartments. $550,000.

Tex., San Antonio—HOUSING—Alamo Constr. Co., 325 W. Josephine St., frame type housing. $325,000.

Tex., San Antonio—DWELLINGS—J. K. Butler, 122 Brightwood St., 24 frame, brick dwellings, concrete slab fdn., various locations. $300,000.

Va., Alexandria—SCHOOL, CONVENT—St. Marys Academy, 2404 Russell Rd., plans by Gleeson & Mulrooney, 1612 Market St., Phila., Pa., school and convent. $350,000.

Wash., Medina—CHURCH—St. Thomas' Episcopal Church, Medina, church. $400,000.

Wash., Moses Lake—HOUSES—Modern Home Builders, Inc. 3849 34 Ave. S., Seattle, 80 houses. $800,000.

W. Va., Bluefield—HOSPITAL—Bluefield Sanatorium, Bluefield, hospital addns. $500,000.

Ont., Brantford—HOSPITAL—Reverend Sisters of St. Joseph, 300 John St. S., Hamilton, hospital. $400,000.

Ont., Bronte—DWELLINGS—A. C. Laughlin, 132 Ellsworth Ave. Toronto, 1000 brick dwellings, concrete fdn., on 600-acre site.

▲ **Ont., Toronto**—SHOPPING CENTER—Home Smith & Co., 35 Old Mill Rd., plans by G. A. McElroy, 152 Pitt St. W., Windsor, 32 stores, rein.-con., brick, shopping center Dundas St. W. and the Kingsway 8½ acres, parking area, $1,000,000.

INDUSTRIAL BUILDINGS

Ala., Birmingham—PLANT—Birmingham Fabricating Co., 724 Ave. W., Ensley, Birmingham, plant addn. $100,000.

▲ **Ala., Birmingham**—MILL—Crosby-Hodges Milling Co., 1501 1st Ave. mill. $1,000,000.

Ala., Birmingham—WAREHOUSE—Molay Bros. Wholesale Grocery Co., 1230 2 Ave. N., plans by Darcey T. Tatum, Jr., Frank Nelson Bldg., warehouse, $100,000.

▲ **Ala., Tarrant**—PLANT—Alabama—By-Products Corp., Tarrant, plant addns. $1,000,000. CD 9/20/50.

Ala., Montgomery—WAREHOUSE—Ellis O. & Roye W. Lowry, Montgomery, warehouse, $100,000.

Del., Wilmington—PLANT—Pepsi Cola Bottling Co., 9 and Market Sts., plans by G. Morris Whiteside 2nd, Du Pont Bldg., 1 story, 160x225 ft., brick, block, concrete, steel plant, $300,000.

Fla., Jacksonville—PLANT—Lehigh Portland Cement Corp., Allentown, Pa., constr. bagging plant, near Bunnell, Approx. $250,000. CD 8/23/50.

Fla., Orlando—PLANT—Tupper Corp., Orlando, mfg. plant. $150,000.

Ga., Augusta—PLANT—Marks Oxygen Co., 1815 15 St., plant addn., $175,000.

Ky., Louisville—PARKING GARAGE—Starks Building Co., Franklin Starks, pres., Starks Bldg., plans by J. H. Kolbrook, Starks Bldg., 4 level parking garage to be called Shoppers Parking Center, Third St. between Walnut and Liberty Sts. $750,000, Ramp Biuldings Corp., 230 Park Ave., New York, N. Y., consult. engrs.

Miss., Pascagoula—PLANT—Industrial Air Products' Co., Pascagoula, plant addn. $200,000.

▲ **Miss., Vicksburg**—PLANT—**Westinghouse Electric Corp.**, 1370 Ontario St., Cleveland, O., lighting equipment mfg. plant. $3,000,000.

Neb., Omaha—PLANT—Farm Fertilizers, Inc., Bellevue and Chandler Rds., fertilizer plant. $126,000. R. F. Ferguson, W.O.W. Bldg., consult. engr.

N. Y., Astoria—WAREHOUSE—Harris Structural Steel Co., 419 Fourth Ave., New York, Zone 16, plans by C. F. Rosborg, 141 E. 40 St., New York, Zone 17, 1 story 200x225 ft. warehouse on block bounded by 20 Ave., 46 St., 19 Ave. and 45 St. $225,000. CD 3/5/51.

▲ **N. C., Canton**—PLANT—**Champion Paper & Fibre Co.**, Canton, plant addns. $4,000,000. CD 4/23.

▲ **N. C., Morganton**—PLANT—**Great Lakes Carbon Corp.**, Morganton, plant addns. $4,500,000. CD 12/14/50.

N. C., Williamston—MILL—Abbitt's Grist Mill Williamston, rebuild mill. $100,000.

Okla., Oklahoma City—WAREHOUSE—Jerome Haag, 1424 N. W. 26 St., warehouse, N. W. 42 St. and Cooper Ave. $175,000. CD 11/3/50.

▲ **Okla., Tulsa**—OFFICE—**Skelley Oil Co., Skelly Bldg.**, plans by Leon Senter, Philtower bldg., office bldg., 5 and Denver Sts. $1,500,000.

S. C., Hartsville—PLANT—Sonoco Products Co., Hartsville, Plans by Hopkins, Baker & Gill, Florence, plant addns. $100,000. CD 2/13.

Tenn., Chattanooga—PLANT—General Shale Products Corp., Johnson City, plant. $100,000.

▲ **Tenn., Memphis**—WAREHOUSE, etc.—Memphis Light, Gas & Water Co., 179 Madison Ave., plans by Everett Woods, 81 Madison Bldg., warehouse and shops on 45 acre tract, on Jackson St. $1,000,000.

Tenn., Millington—WAREHOUSE, etc.—Millington Telephone Co., Millington, warehouse-garage. $100,000.

Tenn., Nashville—PLANT—Avco Mfg. Corp., Berry Field, plant addn. $140,000.

Tenn., Nashville—STORAGE—Shell Oil Co., 50 W. 50 St., New York, N. Y. storage facilities. $106,000.

Tex., Baytown—GARAGE-SHOP—Humble Oil & Refining Co., Humble Bldg., Houston, plans by Wyatt C. Hedrick, archt.-engr., 5201 Fannin St., Houston, garage-shop. $200,000.

Tex., Houston—WAREHOUSE—Radal Corp., 1100 S. Akard St., Dallas, 50,000 sq. ft. masonry warehouse, loading docks, Wakeforest St. $325,000.

▲ **Tex., Orange**—PRODUCTION UNITS—E. I. **du Pont de Nemours & Co.**, Orange, ex., expansion production units. $14,450,000.

▲ **Tex., Orange**—PLANT—Foster Grant Co., Orange, styrene monomer unit, West Orange. $4,766,000.

Tex., San Antonio—STORAGE—Lone Star Brewing Co., 542 Simpson St., addnl. storage units, incl. 62 ft. high rein.-con. cylindrical storage towers, 22 ft. in diam. $200,000.

▲ **Tex., Stamford**—TURBO GENERATOR—West Texas Utilities Co., Abilene, turbo-generator electric power plant, $4,375,000. CD 3/14.

▲ **Tex., Texas City**—CATALYTIC CRACKING UNIT—Texas City Refining, Inc., V. A. Flagg, pres., Texas City, 19,000 bbl. capacity houdriflow catalytic cracking unit, incl., 350 ft. cracking tower. $2,500,000. Kaiser Engineers, 1924 Broadway, Oakland, Calif., consult. engrs.

Utah, North Salt Lake—WAREHOUSE, etc.—Salt Lake Refining Co., North Salt Lake, plans by Ashton, Evans & Brazier, 24 So. West Temple St., Salt Lake City, warehouse, field office and lunch room, trades bldg. $125,000.

Va., Radford—PLANT—Lynchburg Foundry Co., Radford, plant addns. $150,000.

Va., Richmond—PLANT—United States Tobacco Co., 1100 Jefferson Davis Hy., addnl. tobacco storage space. $110,682.

▲ **Va., Sunbright**—PLANT—Foote Mineral Co., Sunbright, plant addn. $3,000,000.

Wash., Seattle—GARAGE—Midtown Investment Co., c/o B. F. Goodrich Co., 1224 1st Ave. S., 35,000 sq. ft. rein.-con. garage. $100,000.

Wash., Seattle—PLANT—Northwest Nut & Bolt Co. 4222 8 Ave. N.W., 100x140 ft., rein. con. nut and bolt mfg. plant, $100,000. J. H. Pearce, 3201 Fremont Ave., consult. engr. CD 6/3.

▲ **W. Va., Huntington**—PLANT—International Nickel Co., Huntington, W. Va., plant addn. $1,400,000.

▲ **N. B., Moncton**—WAREHOUSE—General Motors of Canada Ltd., Oshawa, Ont., parts and accessories warehouse and office, $1,000,000.

Newfoundland, Placentia—PLANT—Placentia Bay Fisheries Ltd., Placentia, fish processing and fish meal plant, $350,000. John Kaye, 14 Prince St., Halifax, N. S., engr.

UNCLASSIFIED

Colorado—RURAL DISTRIBUTION LINES—Poudre Valley Rural Electric Assoc., Ft. Collins, 195 mi. rural distr. line, 35 mi. 44 kv transmission line and sys. imprvs., Larimer Co. $690,000. CD 5/17/48.

▲ **Fla., Port St. Joe**—TRACKAGE—Apalachicola Northern Railroad Co., E. Ball, pres., Barnett Natl. Bank Bldg., Jacksonville Zone 2, railroad trackage. $1,000,000.

† **N. M., Las Cruces**—MISSILE LAUNCHING PROJECT—U. S. Eng., Box 1538, Albuquerque, missile Launching project for White Sands Proving Grounds, Eng. 29-005-52-80, $200,000. CD 10/19/51.

South Carolina—RURAL DISTRIBUTION LINES—Santee Electric Co-operative, Kingstree, 150 mi. rural distr. lines, Williamsburg Co. $575,000. Southern Engineering Co., 1000 Crescent Ave. N. E., Atlanta, Ga., consult. engr. CD 3/3/50.

South Carolina—ELECTRIC TRANSMISSION LINE—South Carolina Electric & Gas Co., 328 Main St., Columbia, electric transmission line between Beaufort and Yemassee, $250,000.

S. C., Columbia—PARK—City, City Hall, bond election Aug. 5, park imprvs. $100,000.

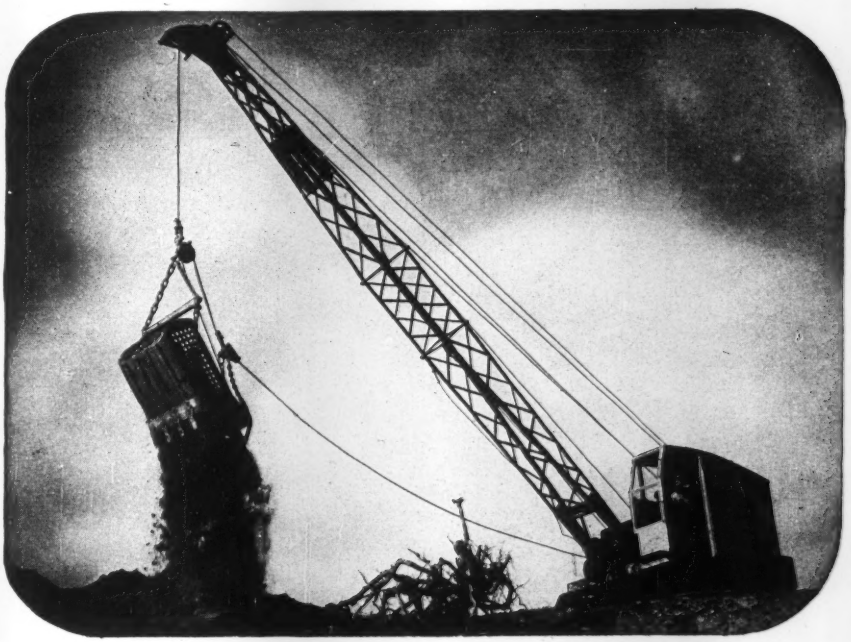
▲ **Tennessee**—TUNNEL—State Hy. Dpt., Nashville, second tunnel through Missionary Ridge near McCallie Ave., Tunnel in Chattanooga, Hamilton Co. $1,500,000.

Tennessee—RURAL DISTRIBUTION LINES—Southwest Tennessee Electric Membership Corp., Brownsville, 288 mi. rural distr. lines, other sys. imprvs., Haywood Co. $760,000. Pat M. Sullivan, Stahlman Bldg., Nashville, engr. CD 10/21/48.

Texas—TELEPHONE SYSTEM—Limestone Rural Electric Co-operative, Mexia, rural pole lines telephone sys. Limestone Co. $350,000.

Wash., Kingston—FERRY TERMINAL—Port of Kingston, Kingston, ferry terminal. $325,000.

WIRE ROPE



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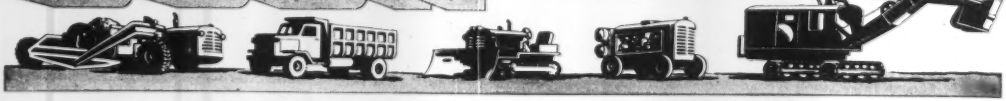

Portable dryer-mixer patches asphalt or concrete breaks

Undoubtedly the most significant development in the field of street and highway maintenance is the Barber-Greene MIXALL, shown above. It's a highly portable, one-unit dryer-mixer for patching breaks and failures in both asphalt and concrete roads. For the first time on-the-spot production is available to highway repair crews of the same high type hot bituminous mix used in original construction. Designed for towing at normal truck speeds, it's mounted on a two-wheel chassis with an adjustable towing hitch that fits any truck. It can stay hitched to the truck or can be detached and set level through use of a jack-leg support built into the towing hitch.

Upper edge of the power-operated skip is only 14 in. above ground, making charging with a wheelbarrow an easy matter if necessary. The skip discharges into a rotary drying drum where flights on the inner circumference lift the aggregate particles and drop them repeatedly through a blast of hot gas and flame provided by an oil burner. Force from this blast drives off moisture from the aggregate and exhausts it through twin stacks. Drying cycles are set through a predetermined number of drum revolutions. In the picture at the left, one operator is re-setting the revolution counter. From the drum the heated, dried aggregate is chuted into a twin-shaft pugmill where pressure-kneading action insures complete and even coating of each aggregate particle.

At the end of the mixing cycle the entire bottom of the pugmill opens permitting the mix to fall into a wheelbarrow or directly into the patch area, in batches up to 300 lb.

Tests conducted under the Joint Highway Research Board of U. of Arkansas showed that MIXALL batches stood up extremely well for stability and resistance to flow. Allied uses of the rig include mixing of Portland Cement concrete; thawing, drying or heating frozen aggregates or abrasives for winter skid control. BARBER-GREENE CO., AURORA, ILLINOIS.

Wax lubricant said to extend tool life

A stick-type wax lubricant is now being marketed for lubrication of cutting tools, threaded metal fastenings and other metallic forming tools. Called "Tool-Saver," it's designed to reduce friction and accompanying heat occurring in machining operations. This facilitates better tool performance while prolonging tool life and preserving tool temper; it also helps prevent scoring or burning. A pound of DoALL Tool-Saver is supplied in a push-out cardboard dispenser tube measuring 11x2 in., and is applied directly to the cutting edges of the tool or to the surface of the material to be machined. The lubricant is recommended for use on saw bands, knive bands, circular saws, drills, taps, reamers, routing and spinning tools, sanding belts or wheels, etc. THE DOALL COMPANY, DES PLAINES, ILLINOIS.

Thunder-Twist is a one-man masonry drill bit

Reportedly for the first time, one man can drill holes in green concrete, using an electric or pneumatic hammer equipped with the new Thunder-Twist carbide drill bit. Thunder-Twist is an improved version of the Thunderbolt bit (ENR Aug 30, '51 p 102) and has two deep spiral vanes which easily remove dust and preclude packing or binding of bits. It's also said to allow faster drilling in granite and other hard masonry materials, and is capable of drilling holes from ⅜ to 1¼-in. diameter, up to 36 in. deep. Available lengths are 3, 4, 6, 12, 18 and 24 in., and shanks or extra-length bits can be furnished on request. NEW ENGLAND CARBIDE TOOL CO., INC., CAMBRIDGE, MASS.

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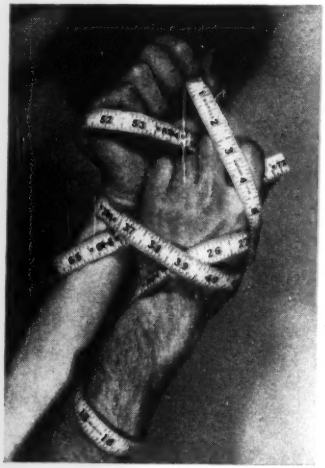
NEW PRODUCTS



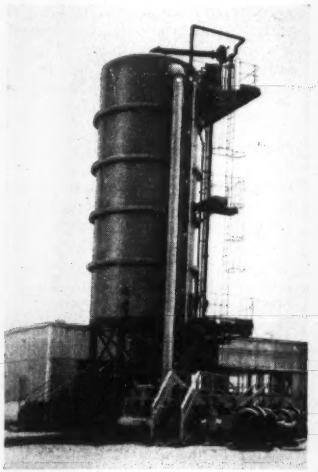
6-ft folding rule is unbreakable

Your first glance at this picture will tell you that it's a tape measure wound around the carpenter's hands. Look closely and you'll see that it's not. It's a 6-ft folding rule of hardened, tempered alloy steel that can be bent and twisted—yet it will return to normal shape immediately. Weight is only 3 1/5 ounces, 20 per cent less than an ordinary wood rule. It can be used to measure pipe circumferences, sheaves, pulleys, etc. and needn't be folded up after each measurement for fear of breakage. Enamel is white and markings are black. The company guarantees to "replace or refund full purchase price if the Durall Folding Rule breaks or if the joint wears loose or proves unsatisfactory . . ." DURALL TOOL CORPORATION, 117 WOODWORTH AVENUE, YONKERS, NEW YORK.

Reo enters diesel field with truck-tractor engine

Reo Motors Inc. recently announced that they were producing trucks powered by liquified petroleum gas (LPG), and now has entered the diesel field with a tractor model said to be one of the lightest units on the road in its class. The new model, F23DT, is powered by a new, light Cummins JBS-600 diesel. A standard F-23DT chassis and cab, with 20 gallons of fuel and all tractor equipment except the fifth wheel, weighs 9,475 lb. It has a gross tractor rating of 50,000 lb and a 130-in wheelbase. The Cummins JBS-600 is a 4-cycle engine that

develops 150 hp at a governed 2,500 rpm and 360 ft-lb of torque at 1,400 rpm. Weight of the complete power plant, including clutch and transmission, is only 1,825 lb. REO MOTORS INC., LANSING, MICHIGAN.



Permutit introduces new vacuum deaerator

A vacuum deaerator like the one shown here is a unit which removes oxygen and free carbon dioxide from water so as to protect piping, steel tanks and other equipment from the harmful effects of corrosion. These vacuum deaerators can be used for a variety of purposes, including: (1) removing oxygen and carbon dioxide from surface water supplies which may be pumped great distances to point of use; (2) removing oxygen from waters used for air conditioning and other cooling systems; (3) removing oxygen or carbon dioxide from demineralized or chemically treated water to prevent corrosion of steel piping. Other uses include the removal of gases from demineralized water used in ice manufacture, bottling beverages, and from caustic or other liquors where these gases are objectionable in the manufacturing process.

In operation, water is sprayed into the deaerator shell, maintained under vacuum or at an absolute pressure approximating the boiling point. Pressure in the unit is held at a vacua of 29.75 in. with respect to a 30-in. barometer when deaerating water at 40 or 50 deg F respectively. The entering water is distributed over the top surface of a stack of trays. This

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	829068	1⅛" hex x 6"	1¼" dia.	14"	3.55
	829069	1⅛" hex x 6"	1¼" dia.	18"	4.10
	829070	1⅛" hex x 6"	1¼" dia.	24"	4.90
	829071	1¼" hex x 6"	1⅜" dia.	14"	4.20
	829072	1¼" hex x 6"	1⅜" dia.	18"	4.90
	829073	1¼" hex x 6"	1⅜" dia.	24"	5.95

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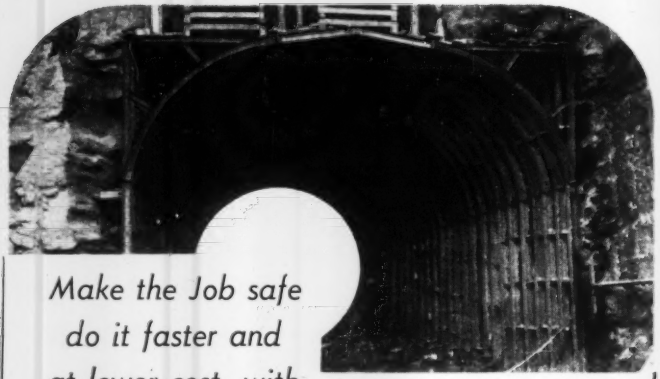

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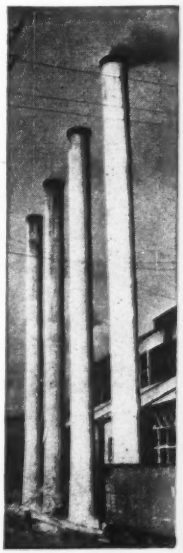

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subdivides the water particles repeatedly and the non-condensable gases and water vapor are then drawn upwards through the packing and removed by vacuum pumps or steam ejectors. The higher the partial vapor pressure the lower will be the gases' partial pressures, and therefore, the less will be their solubility. THE PERMUTIT COMPANY, 330 WEST 42ND STREET, NEW YORK 36, NEW YORK.

New product briefs . . .

Called Plastiglas Hedgard, **a new safety hat** combines style and comfort with strength, high dielectric properties, unusual shock-absorbing features and design that protects the neck from dripping fluids and the sun. Made by **Davis Emergency Equipment Co., Inc., Newark, New Jersey,** it's reported to be lighter than conventional type hats. Free air circulation in the interior of the hat adds to wearer comfort.

One of the most modern units offered to contractors and highway departments is the new Littleford **Spraymaster bituminous distributor,** a full circulating spray bar up to 24 ft in width. Labeled Model CIRC, it comes in sizes from 800 to 4,000 gallon capacity. A bypass cap on each end of the bar allows full circulation; material passes through front of the bar and bypasses to the rear bar. It's available from **Littleford Bros., Inc., 457 E. Pearl Street, Cincinnati, Ohio.**

Materials which do not lend themselves for **grouping on pallets** for transportation can be strapped and held in place by the new **Rogers pallet binders,** according to **Roger L. Toffolon, Brandywine Ave. and Wylie St., Schenectady, New York.** No tools are needed to attach the canvas binders which come equipped with webbed straps and will contain materials to a maximum pallet height of 51 inches.

A new **air-operated, double-action reciprocating pump** especially designed for greater volume and pressure for supplying long-line circulating systems and spray guns, is being manufactured by **The Gray Company, Inc., Minneapolis, Minnesota.** The circulating system in the heavy-duty "Paintmaster" delivers paint directly to the spray head and back through the supply lines. Since no air pressure is exerted on the paint itself, aeration is reduced to a minimum, thereby eliminating bubbles and pinholes in the finished surface.

PUBLICATIONS

Production road—Men responsible for the application of power to industrial machinery will be interested in the "Basic Industries" issue of Production Road. The 24-page booklet points up opportunities and responsibilities involved in building products which are closely interlocked with the drive for better living. A wide variety of uses to which industrial friction and hydraulic drives are being applied—from farm tractors to fishing trawlers—are accompanied by on-the-job illustrations. TWIN DISC CLUTCH CO., RACINE, WIS.

Stainless steel in architecture—This new 20-page booklet, "How and Where to Specify Stainless Steel in Architecture," lists nearly 300 construction applications of stainless steel ranging from air conditioning ducts to show windows. A companion book to that published by the Committee of Stainless Steel Producers of American Iron and Steel Institute, it also provides information on some 20 groups of fabricated stainless products ready for installation, as well as data on most usual types of stainless for architecture. A specification guide discusses recommendations for good practice in handling stainless by metal contractors. AMERICAN IRON & STEEL INSTITUTE, 350 FIFTH AVENUE, NEW YORK, N. Y.

Elevated steel tanks—Advantages of using large elevated steel tanks to provide gravity pressure in municipal water works systems are listed in the 24-page booklet issued recently by Chicago Bridge & Iron Co. It contains detailed information on design and construction of Horton radial-cone elevated tanks and Horton spheroidal elevated tanks. Photographs of actual installations, a table of sizes and a page of drawings showing construction details are included. CHICAGO BRIDGE & IRON CO., 332 SOUTH MICHIGAN AVE., CHICAGO 4, ILL.

What hardsurfacing can do for you—Producers of Ranite hard-surfacing welding materials have published a catalog giving both general and specific information on their product. Savings to be effected by the use of hard-surfacing are listed along with recommended application procedures, rod selection, amperages, speed, heat control and proper rod grip. Sizes, characteristics and quality comprise the remainder of the catalog available from the RANKIN MFG. CO., 3072 WEST PICO BLVD., LOS ANGELES 6, CALIF.

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Buchanan Lumber Co. 85
Buda Co., The 122
Butler Bin Co. 28
Byers Co., A. M. ..... 2nd Cover

Cement Gun Co. 126
Chain Belt Co. 43
Chapman Valve & Mfg. Co. 47
Cities Service Companies 11
Clearprint Paper Co. 119
Cleco Div. Reed Roller Bit Co. 125
Commercial Shearing & Stamping Co. 126
Conners Steel Co. 63
Continental Steel Corp. 72

Dex Safety Trimmer 75
Dravo Corp. 37
Dresser Mfg. Div., Dresser Industries 31
Dudgeon, Inc., Richard 111
Du Pont de Nemours & Co., Inc. 115

Economy Forms Corp. 108
Ellicott Machine Corp. 113

Fate-Root-Heath Co. 33
Fidelity & Casualty Co. of N. Y. 52
Flintkote Co., The 48
Foundation Equip. Corp. 58

Gardner-Denver Co. 53
Goodyear Tire & Rubber Co. 1
Gradall Div. of Warner & Swasey Co. 44
Griffin Wellpoint Corp. 62
Gunite Concrete & Construction Co. 85
Gunite Construction Co. 118

Harnischfeger Corp. 55
Hendrick Mfg. Co. 84
Hendrix Mfg. Co. 50
Hose-McCann Telephone Co. 72

Imperial Pencil Tracing Cloth 49
Ingersoll Rand Co. 12, 13
Insley Mfg. Corp. 59
Irving Subway Grating Co., Inc. 108
Irvington Form & Tank Corp. 83

Johnson Co., C. S. 65

Kerrigan Iron Works 58
Kinnear Mfg. Co. 106
Koehring Co., The 64, 65
Koppers Co., Wood Preserving Div. 60
Kwik-Mix Co. 65

Layne & Bowler, Inc. 76
LeRoi Co. 70, 71
Lewis & McDowell, Inc. 82
Lock Joint Pipe Co. 80
Louisville Cement Co. 61

M & H Valve & Fitting Co. 118
Mall Tool Co. 84
Master Builders Co. ..... 3rd Cover
Monsanto Chemical Co. 4
Moretrench Corp. 38
Morse-Starrett Products Co. 124
Murphy Diesel Corp. 5

Naylor Pipe Co. 51
Northwest Engineering Co. 3

Ohio Locomotive Crane Co. 118
Owen Bucket Co. 116

Parsons Co. 65
Pennsylvania Drilling Co. 117
Plasteel Products Co. 111

Raymond Concrete Pile Co. 57
Roebling's Sons Co., John A. 9, 121
Rogers Bros. Corp. 77
Rollway Bearing Co. 6
Ryerson & Sons, Inc., Jos. T. 106

Sauerman Bros., Inc. 80
Servicised Products Co. 54
Sika Chemical Corp. 75
Smith-Blair, Inc. 117
Sprague & Henwood, Inc. 117
Stang Corp., John W. 109

Taylor Machine Works 109
Texas Co. ..... 4th Cover
Thew Shovel Co., The 79
Timken Roller Bearing Co. 67
Tinney Drilling Co. 124
Trailer Village, Inc. 82

Unit Crane & Shovel Corp. 15
U. S. Pipe & Foundry Co. 73
Universal Atlas Cement Co. 20
Universal Sewer Pipe Corp. 68

Vibro-Plus Prod., Inc. 62
Vickers, Inc. 16
Vulcan Iron Works 83

Warner & Swasey Co. 44
Williams Co., J. H. 124
Winslow Gov. Std. Steel Works Co., Inc. 60
Wood Co., R. D. 8

Professional Services 97

SEARCHLIGHT SECTION

(Classified Advertising)

H. E. Hilty, Mgr.

Employment
Positions Vacant 86, 87
Selling Opportunities Offered 86
Positions Wanted 87
Part Time Work 87
Employment Services 87
Educational
Schools 87
Tutoring 87
Business Opportunities
Offered 87
Notices
Proposal 98, 99, 100
Property
Wanted 87
Equipment
(Used or Surplus New)
For Rent 92
For Sale 88-97
Piling 96
Pipe 97
Rail 95
Surveying Instruments 97
Wanted
Equipment 96
Miscellaneous 87

ADVERTISERS INDEX 87

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EDITORIALS

Wanted: A weldable steel

CELEBRATION of its 50th Anniversary did not deter the American Society for Testing Materials from carrying on business as usual during its annual meeting last week. There were too many pressing problems requiring immediate attention—like the one posed by the Office of Defense Mobilization in requesting Committee A-1 on Steel to revise its structural steel specification A7 to include steels more acceptable for use in welded construction.

Committee A-1 has tackled this problem many times in the past without success. The difficulty is that the steel producers say that such a steel would be much more expensive than A7, whereas the need is for a more weldable steel at about the same cost as the present structural grade.

Proponents of weldable steel seek a guarantee of ductility. They are not satisfied with existing tests specified in A7 in view of the fact that the specification does not set an upper limit on carbon and manganese. But the limits they wish to set on carbon are too low to suit the steel producers. So once again, the committee found itself unable to agree on a specification for weldable steel.

This, of course, does not dispose of the problem for producers eventually furnish consumers what they require. In this case as in many others the question is more one of economics than of technology. Any steel producer can make a steel that will meet the requirements, but for most the necessary selling price would be higher than the traffic will bear. This points up a double-barreled responsibility. For producers, it is to seek cost-reducing methods of manufacture. For consumers, the responsibility is to create more efficient welded designs and construction techniques to the end that welding will be more widely used. These two forces working together can speed the day when a weldable steel will be available at a cost that will not handicap the development of the welding art.

Learning from accidents

ACCIDENTS have taught engineers many a useful lesson by revealing unforeseen weakness in a design practice or a construction method. The collapse of one end of a span of the Sullivan Square overpass in Boston (ENR June 19, 1952, p. 28) appears to be no exception.

The collapsed end was supported on 10½-in. high rockers resting on top of a steel bent. Because the end of the adjacent span resting on this bent was also carried on rockers, the bent was "free standing", and its stability, therefore, dependent in some degree on balancing thrusts from the two sets of rockers. The condition of the anchor bolts at the base of the bent after the accident indicated that its top had been rotated away from the fallen span sufficiently to let it fall.

Four consulting firms reporting to the Massachusetts Department of Public Works concluded that the steel erector had set the rockers (for erecting purposes) at so wide an angle from the vertical that resulting horizontal thrust deflected the free standing bent out from under the end of the span.

A consultant engaged by the steel erector concluded that the inclination of the rockers was not the basic cause of collapse, since under some critical loads the supporting system would become unstable whenever the rockers were not vertical. He cited the particular design of the rockers as one that would inherently cause thrust, which, in combination with a free standing bent, could threaten stability.

None of the investigators discussed the possible effect of having rockers for two spans supported on a single, flexible bent. Under conditions as they existed on the Boston work—the short span with concrete roadway in place and the long span with bare steel—could not both sets of rockers have tipped in the same direction, so that their thrusts no longer counterbalanced each other, but combined to deflect the bent?

In any event, whether erection or design was at fault at Boston must still be considered an unsettled question. What is clear is that rocker details and type of supporting structure must be critically reexamined by designers to be sure that stability is assured—during erection and after completion. Rocker expansion is so much more efficient than the older sliding or roller designs that this accident should not be allowed to give it a bad reputation.

Hot-weather thought

AT A DEADLOCKED COMMITTEE MEETING one member observed that the situation reminded him of a definition of engineering that was being bantered around the office where he works. Engineering, it states, is an exact science because each engineer wants every engineering job done exactly the way he thinks it should be done.

That quip should not be laughed off too lightly because it appears to point to a weakness in the makeup of many engineers—an unwillingness to compromise when compromise calls for no departure from sound fundamentals. That unwillingness to compromise may be one of the reasons why engineers frequently do not move up into management positions.

ENGINEERING NEWS-RECORD is a consolidation of Engineering News and Engineering Record, effected in 1917. The Contractor was consolidated with Engineering News Record in 1918. Engineering News was founded in 1874 as The Engineer and Surveyor, which title subsequently became The Engineer, Architect and Surveyor, Engineering News and American Railway Journal, and finally Engineering News. Engineering Record was established in 1877 as the Plumber and Sanitary Engineer. Subsequently it became The Sanitary Engineer, Engineering and Building Record, and finally, Engineering Record. All rights to the above titles are reserved.

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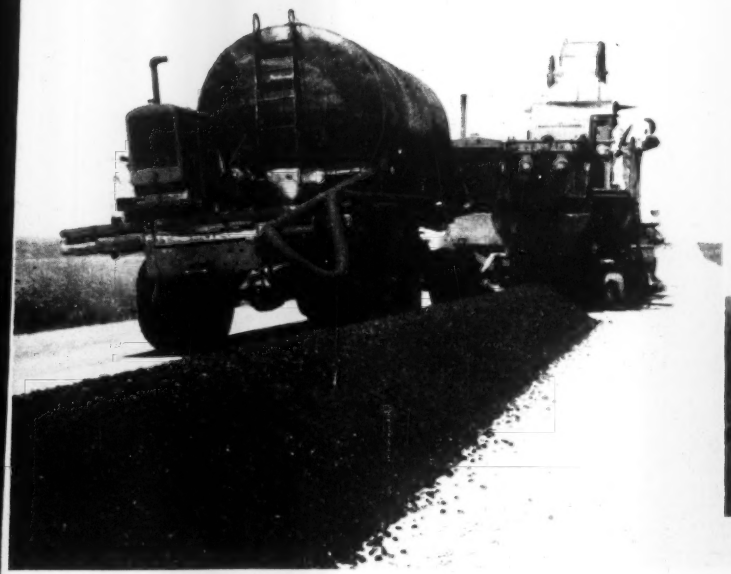

Texaco Slow-curing Asphaltic Oil and aggregate were mixed by travel plant in surfacing of this 10 mile section of South Dakota's Route 24 in the Black Hills area. Work done by the Northwestern Engineering Company, Rapid City, S. D.

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